

Harl Vincent — L. Ron Hubbard — Nat Schachner

ASTOUNDING

SCIENCE-FICTION

NOV.
1938



JUPITER
SEEN FROM
GANYMEDE



REUNION ON GANYMEDE by Clifford D. Simak

20¢
NOV.
1938
ASTOUNDING
160 PAGES

Thousands turn to Listerine as science proves it CURES DANDRUFF

Clinical evidence that Listerine Antiseptic kills queer Pityrosporum ovale germ, that causes dandruff, starts wave of home treatments . . . letters pour in telling of rapid, complete cures

Ever since the amazing dandruff cures accomplished with Listerine became a matter of clinical record, thousands of dandruff sufferers throughout the country have swung over to Listerine for quick, effective relief. Many of them write to us, fervently praising Listerine for what it has done for them.

Here are a few random excerpts from the hundreds of grateful letters that reach us:

"Have been using Listerine for only two weeks. Already feel wonderfully relieved from the horrible itchy feeling."

"Two weeks after first using it my dandruff was gone."

"Tried Listerine for 21 days and can find no trace of dandruff now."

"Tried everything possible, until one day I used Listerine. The itching stopped at once. My hair has stopped falling out."



Kills the Germ

In the sensational research that established the Pityrosporum ovale germ as the cause of dandruff, it was positively proved that Listerine kills the germ.

When a mid-western skin clinic instructed dandruff patients to use the daily Listerine Treatment, a substantial number obtained marked relief within

the first two weeks on the average.

76% of a group of dandruff sufferers at a New Jersey Clinic, who used the Listerine treatment twice daily, showed complete disappearance of, or marked improvement in, the symptoms within thirty days.

Start Treatment Today

Don't waste time on ordinary remedies that merely wash away dandruff symptoms temporarily. Start ridding your scalp of the dandruff germ with Listerine today.

And remember, like any other germ disease, dandruff is a stubborn malady requiring persistent treatment. Even after it has been cured, it is wise to guard against re-infection by occasional Listerine Antiseptic massages at regular intervals.

LAMBERT PHARMACAL COMPANY, St. Louis, Mo.

Cut this out

THE TREATMENT

Once or twice a day, use full strength Listerine on the scalp, spreading it with fingers, or parting the hair and applying with cotton or eye dropper.

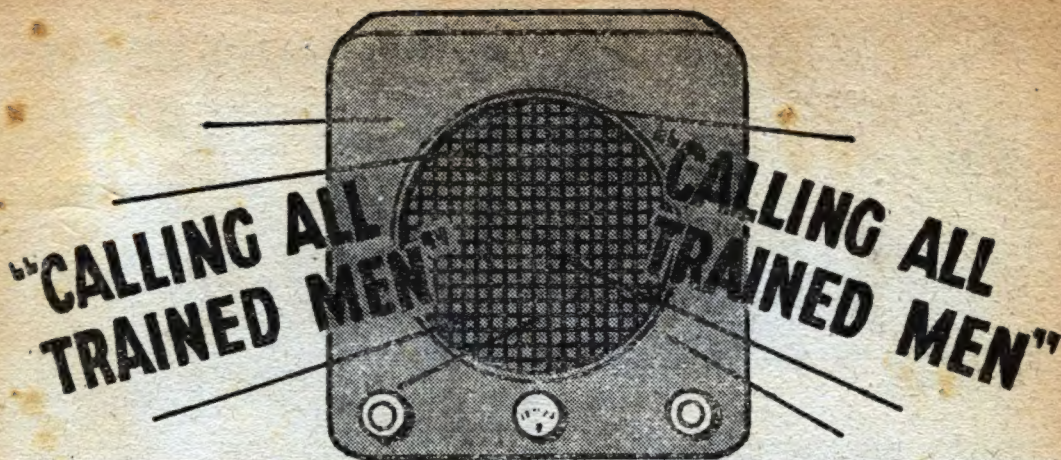
Now massage scalp vigorously and persistently with fingertips; active stimulation of the scalp is highly important in dandruff treatment.

If scalp is excessively dry, use a little olive oil in conjunction with Listerine. Listerine will not bleach the hair.



P. S. Listerine, which has been discovered to be such an excellent germicidal treatment for dandruff, is the same Listerine Antiseptic which has been used as a mouth wash and gargle for years.

LISTERINE the PROVED treatment for DANDRUFF



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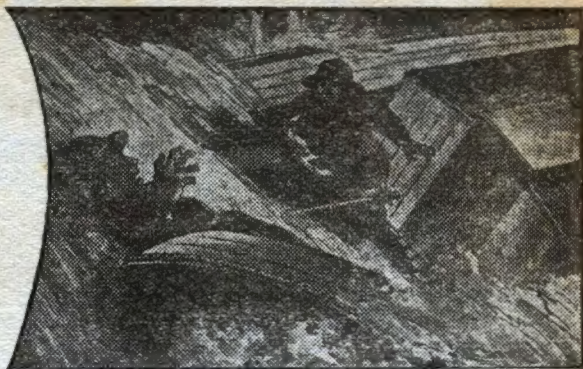
"GOODBYE WORLD! MY SHIP FADED INTO THE NIGHT!"

OVERBOARD IN STORM, YACHTSMAN CLINGS
TO CAPSIZED DORY AS SLOOP HOLDS COURSE



① "My 40-foot sloop was footing it up Long Island Sound like a scared cat before a stiff sou'-west breeze," writes Tom Meyer

of 280 Bronxville Road, Bronxville, N. Y.
"At midnight...



② ...off Smithtown Bay, it really began to blow. My partner, Larry Starr, was asleep below, and I gave the tiller to a friend who had done no sailing before, so I could get the dinghy in on deck before it got away from us. Then, with the darn thing half-way on board a big comber pounded over the stern, swept my feet out from under me and overboard I went, weighted down with boots and oilskins. I still clung to the dinghy, but its line had parted and my ship faded quickly into the black night!

③ "The lad at the tiller didn't know how to bring the ship about, and although he would wake Larry, they'd be too far away to ever find me in that roaring darkness.

"I was growing numb with cold. I couldn't hang on much longer. I rolled against the gunwale of the dinghy for a fresh grip on the world that was slipping away from me. Something hard dug into my side... the flashlight in my pocket! Soaked, though it was, here was a chance!



④ "I pressed the switch. A finger of light stabbed through the storm. Time dragged on as I played the light about me. I cursed my shipmates. 'Why can't the fools see my light?' and then... the beam caught the white sail! I screamed for joy. An arm waved encouragement. Minutes later, thanks to those fresh DATED 'Eveready' batteries that kept working under the toughest conditions imaginable, I was warm and happy in my own bunk on my own ship, our Block Island cruise resumed.


(Signed)

Tom Meyer

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STREET & SMITH'S SCIENCE-FICTION

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JUPITER

Astounding's third astronomical color-plate appears this month—Jupiter as seen from Ganymede, illustrating Clifford D. Simak's story *Reunion on Ganymede*. This plate is of particular interest due to a number of factors—one of which was partly unintentional!

There is an error in the picturization. The error is of such character that it was, first, easy to make, and, second, easy to fall into and accept. When I did realize it, I decided to let it go through as is for the interest of the readers. The error is plainly visible, if logic and a modicum of astronomical knowledge are applied—but it is of a type not readily noticed at once. The nature of the error—and why it is such—will be shown next month, in the Analytical Laboratory. I'll try to publish the names of those who spot the error correctly in the Brass Tacks column in the January issue. So go to it!

But as to the picture as presented: it is practically an exact representation. Ganymede is considered to be on the same side of Jupiter as are Io and Europa, at the moment depicted. Callisto is across its orbit from Ganymede, a tiny dot just above Jupiter's bulk (slightly exaggerated, as shown, to distinguish it from the stars. In fact, viewed from Ganymede, it would appear much as Venus does from Earth, distinguished from the stars because it would not twinkle.)

Ganymede is shown on the assumptions—which seem reasonable—that it is exceedingly cold, and has a very thin atmosphere, barely sufficient to stir restlessly the frozen carbon dioxide and sandy snowflakes that nearly bury the worn rocks. Thin such air may be, but the temperature differences would affect such a tenuous atmosphere strongly; the winds would be whining gales of near-vacuum. The slow, age-long action of the hard-frozen ice and CO₂ snow would have rounded and eroded the rocks.

Only a painting done in fluorescent colors, viewed under ultraviolet illumination, could picture adequately the range of brilliance seen. Jupiter would be overwhelmingly luminous—and overwhelmingly huge. Accustomed to Earth's little Moon, to see the monstrous bulk of Jupiter in the sky might well afflict some humans with an unshakable fear—a sort of cosmic claustrophobia—that the immense thing were about to fall.

Brown was faced with a hard task in depicting that foreground. Jupiter's ruddy-orange light would, naturally, give the effect usual to such "warm" colors. The barren, blizzard-swept plain, unutterably cold, and the snow-buried hills in the background would lose their force. The cold blue of the shadows helps to give more of the impression of that frozen waste.

The human eye sees clearly only those images focused on the tiny spot near the center of the retina—the focus of attention—although a very wide field of vision is actually covered. A psychological effect results in the process of seeing that makes objects clearly seen appear larger, and especially this is true if they are luminous. The resultant effect makes our Moon appear to cover more of the sky than it actually does. It tends, too, to make stars seem more numerous, since the black space between is a negative thing, a thing *not* seen. Hence, a photograph from Ganymede would not show stars so thickly strewn—but a human being would get much that impression.

The Editor.



I jumped from \$18 a week to \$50 -- a Free Book started me toward this **GOOD PAY IN RADIO**

**HERE'S
How it
Happened**
by S. J. E.
(NAME AND ADDRESS
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Mail the coupon now for "Rich Rewards in Radio." It's free to any fellow over 16 years old. It points out Radio's spare time and full time opportunities, also those coming in Television; tells about my Training

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In Spare Time While Learning**

The day you enroll I start sending Extra Money Job Sheets showing how to do Radio repair jobs. Throughout your training I send plans and ideas that made good spare time money—\$200 to \$500 a year—for hundreds.

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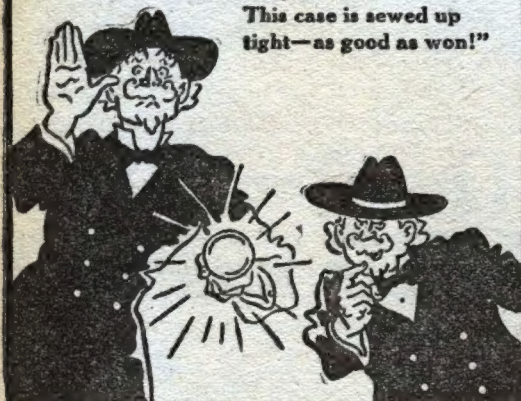
"Oh, Mr. Mattingly,
Oh, Mr. Mattingly,
Here's a mystery—and you're
a first-rate sleuth!"



"Why is M & M so mellow,
Yet so hearty, too, old fellow?
You know the clue—
now let's tell folks the truth!"



"Why, Mr. Moore,
Why, Mr. Moore,
This case is sewed up
tight—as good as won!"



"It's because folks realize
That the flavor they so prize
Comes from old-time slow-distill-
ing—the way we've always done!"



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more, M & M is a blend of *straight*

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You'll say it's just about the
grandest whiskey you ever tasted
—and you'll like its low price!

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*A blend of straight whiskies—100% straight whiskies—90 proof.
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SIMULTANEOUS WORLDS

By Nat Schachner

Beginning a two-part serial involving a new concept of worlds and atom-waves.

JUAN BAPTISTE MORALES brought his fist down with a crash that set the rickety table to quivering and the dishes to dancing. "*Madre de Dios!*" he swore. "Thees must stop!"

Pepita, his wife, straightened her squat back with a jolt, turned blinking eyes from the stew over which she was laboring. "Eh, Juan?" she demanded, astonished. "What ees this shouting for? I am not deaf. What ees it must stop?"

Her husband glared at her. He had never dared do so before. His meek little face had set in a rigid mold. His thin, scraggly mustache—the despair of his life; in spite of patient twirling and waxing it drooped like the ears of a sad hound—now bristled with a strange fierceness.

"Thees tyranny, woman!" he shouted.

Pepita stared at her husband in bewilderment. She had always been the boss in the family. She knew it; Juan had known it and acted accordingly; everyone in the little village of Angra del Reis found it quite natural. But she suddenly felt afraid of this stranger to whom she had borne half a dozen broad-faced children.

"What tyranny do you talk about?" she asked hesitatingly.

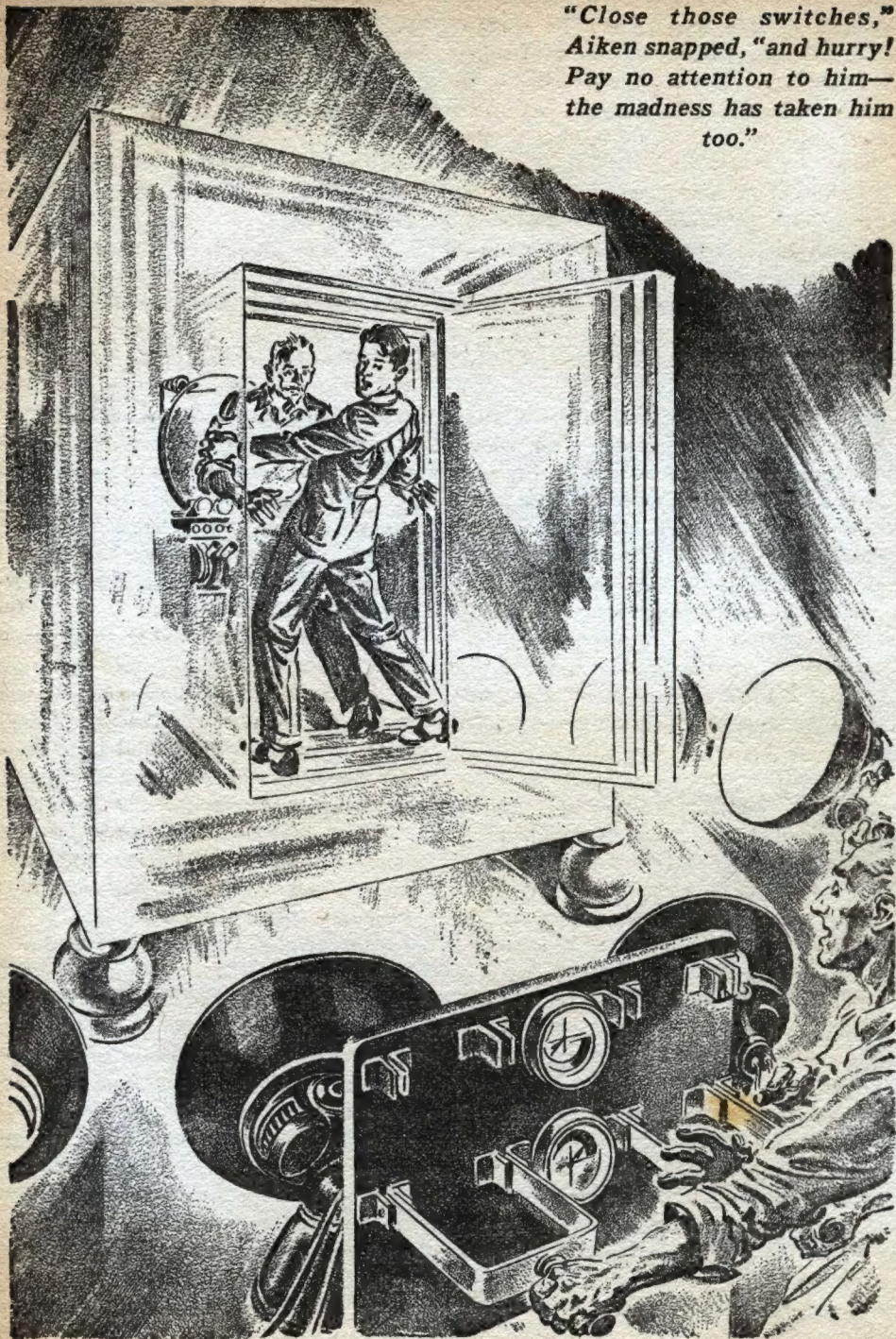
He looked upon his wife with a lofty

scorn. "You are a fool, Pepita!" he told her. "Otherwise you would know it ees the Federated States of the Americas of wheech I speak. Eet has become most insupportable to me this very moment. I can stand no longer the sufferings of my fellow ceetizens in our State of Brazil."

Indignation awoke in her—a flare-up of her old assertiveness. "It ees you who are a fool, Juan Baptiste! What ees this tyranny you make nonsense about? Never since the good Lord first made thees world and put plain peons upon it to labor and grow things upon the ground, has it been so good for people like us. You, Juan Baptiste, who are eegnorant and but a leetle shrimp, eat savory stews and cakes of the finest corn; you vote on election day for delegates to the House Locale in Brazil; you vote for delegates to the Congress of all the Americas; you vote even for the great Preseedent who stays in Washeengton—though praise to the Holy Mother, you vote always as I, Pepita, tell you to. Who else has made us so strong that United Europe looks toward our shores weeth tongues that hang, yet dares not try to seize our goods and enslave our bodies?"

Juan paid no attention to her tirade. He thrust his sheath-knife, broad-bladed, sharp, within his belt. He clapped his battered straw hat upon his

*"Close those switches,"
Aiken snapped, "and hurry!
Pay no attention to him—
the madness has taken him
too."*



head. "You are a woman, Pepita," he observed tolerantly, "and a woman's head is but an empty gourd in which words rattle meaninglessly. Know that there ees a tyranny; that I, Juan Baptiste Morales, say so; and that it must come to an end—thees very moment."

He walked with firm, quick steps toward the open door of the hut, out into the fields of waving corn that spread up to the very edge of the jungle.

"Where are you going?" Pepita screamed.

"To Rio," he shouted back, "to make a revolution!"

So it started—the civil war that made of Brazil a shambles and a nightmare; that cost thousands of lives and brought ruin and desolation to once smiling fields and populous cities. For other Juans, Pedros, Josés, Sanchos, wrought upon by a similar irresistible compulsion, downed peaceful implements with simultaneous gestures, seized weapons from crudest machetes to most advanced rocket-bombs, converged in unexpected assault upon the startled troops of the Federated State.

DEEP INSIDE the impenetrable jungle of the Matto Grosso, Iskra sat enclosed within a shimmering cube. Its walls hazed strangely under the tropic sun; they seemed to have no outer terminus, but trailed off into the void in wavering bands of light. Inside, Iskra watched and listened and manipulated innumerable controls with uncanny fingers. A sardonic smile flicked over his hawklike features. He seemed satisfied with what was taking place.

A human visitant, had there been any in that solitary jungle, would have fled in terror from that strange cube and its stranger contents. For even as the walls of the enclosure tapered off into endless nothingness, so, too, did Iskra seem to blur upon the sight and have interior beginning, but no outer end.

Yet his form and features, though

subtly different, were substantially not unlike those of the denizens of Earth, especially when he pressed a certain key control. Then the illimitable haze that surrounded him flared briefly, died, and left his outer lineaments clean-cut and abrupt; somewhat alien, it is true, but not otherwise frightening to the beholder.

He was pleased. The first step in his carefully mapped campaign had proven eminently successful. The sonovisors, of strange concavity and orange-metallic luster, brought to him the sequence of events that disrupted Brazil and made of it a shambles. Every so often he pressed an octahedral disk. Blue spears of flame stabbed through the lush enclosing the trees, yet harmed them not, and new hordes of unknowing Brazilian citizens of the Federated States of the Americas quivered with irresistible compulsions, and flung themselves into unwonted rebellion and slaughter.

Every so often Iskra paused in his mundane labors, and pressed a different set of controls. Then both cube and himself seemed to elongate into infinity; the shimmering became a blaze of colors beyond the ordinary visible spectrum, and the tapering waves bent and twisted into curves and angles unknown to terrestrial mathematicians.

Far off, so far that it seemed to be within another universe, the tortured waves spread suddenly, expanded and made contact with a human-appearing creature. His face was lean and dark, and furrowed with a driving will. His smooth black hair fell in a disdainful mop over his low forehead. Authority glittered in his eyes, lurked in the thin compression of his lips. Outside his form, all else was blurred and indistinct.

Iskra spoke into a convex mirror of burnished green. His voice was tintured with a curious respect.

"Your commands have been obeyed, mighty Ontho," he said. "The first

section of your magnificent plan has been effected with admirable success. But to comprehend the whole will take almost a year of this-time."

Ontho's lips parted in a thin smile. "It does not matter. Time is a slow-paced snail within the borders of your subordinate world. Our-time moves at a more rapid rate. A year such as you specify means but a week in Ooroopah."

"You are right, as always," Iskra replied humbly.

"Naturally," retorted Ontho. "But continue with the other sections of the plan, and report to me at intervals. I, myself, shall watch for the effects as they develop in Amrique, and prepare to strike with all our forces."

His eyes glowed with a fierce luster. "Too long have they thought themselves impregnable. Too long have they mocked us with their insupportable condescension. The day of Ooroopah is coming."

He faded abruptly. The queerly distorted waves of light retracted from infinity, seemed to roll back upon themselves into normality.

Iskra muttered something, shifted new controls with long, snakelike fingers. The glistening cube rose silently into the air, fled with a swift *swoosh* over the featureless jungle toward the north.

DOUGLAS AIKEN frowned impatiently at the first of the reports that lay upon his shiny duraluminum desk. The frown deepened as he leafed through the heap. The little furrows on his forehead intensified as he read on with ever-increasing care.

The group that sat waiting in his unostentatious office followed every play of expression on his mobile countenance with tense anxiety. Not a sound came from them; even their breathing seemed withheld. The swift rustling of the composition sheets was curiously loud.

Doug Aiken finally turned the last

report, ran lean, lithe fingers through his tousled hair. His face was preternaturally grave, almost incredulous in its expression. His quick, ordinarily humorous eyes ran over the tensely expectant men.

They were important personages—the Cabinet of the Federated States of the Americas. The President himself, Paul Winslow, sat at the farther end of the table. His tall, spare frame drooped with the cares of office. His homely, yet profound features were weighted with this newly added burden. On his left was Donald Burchell, Secretary of Defense, grizzled, rock-hewn, slow in speech and thought, yet a tower of imperturbable strength. To his right sat perky little Manuel Ribera, Secretary of Education. He fidgeted on the edge of his seat, holding in his explosive Latin volubility with a mighty effort. Crowding behind them were Preston Hale, Secretary of Communications; Jean La-forde of Canada, Secretary of Industry; and the Argentinian, Pancho Estoban, Secretary of Science and Arts.

Doug Aiken was younger than any of them; he was only twenty-nine. Nor did he hold any official position in the bureaucracy of the Federated States. His bronzed, lean features and athletic build seemed more fitted for strenuous outdoor activities and Olympic championships than for stodgy conferences with these grave and revered seniors.

Yet they had come to him, by unanimous decision, and dumped this strange and disturbing problem upon him with a certain relief. If any one could possibly ferret out the obscure motivations for what had occurred, for what was even then taking place, it would be Douglas Aiken.

Already, within the comparatively few years of his work, he had forged into universal recognition as a great psychologist, as a profound delver into the curious quirks and crannies of the human mind. He possessed an uncanny

faculty for taking it apart and finding out what made it tick, for determining what made human beings do the things they did—irrational and incongruous though their outward actions might seem to be.

President Winslow broke the silence. His voice was low, deep with pain. "Those are the reports, Aiken," he said. "The confidential communications from our secret agents within the various trouble areas. I don't suppose you have arrived as yet at any conclusions. You will doubtless require time to study the matter at your leisure. But if you could possibly give us even a hint as to what you——"

DOUG SIGHED, drummed impatient fingers upon the crisp pile of sheets. The incredulous look upon his face became fixed in a brooding certainty. "I can give you much more than a hint, Mr. President," he said softly.

There was a stir among the Cabinet members. Manuel Ribera almost bounced off his seat. "You mean, Mr. Aiken, you have fathomed already the causes of these—these occurrences?"

Doug shook his head in the negative. "Not the causes," he corrected. "But at least I can correlate the effects, go back even to disclose an underlying historical sequence."

"What we are interested in at present," declared Burchell, Defense Secretary, with slow emphasis, "is not history, but ways and means to quarantine these unheard-of disturbances, to prevent their spread."

A dour, unimaginative man, Doug thought; one who did not see beyond his nose. "Nevertheless," he retorted, "to understand the present, we must go back into the past. Let me explain."

He picked up the first report, tapped it with his thumb. "The whole business received its initial impulse in Brazil about four months ago. A strange affair to startle a world that had ap-

peared to have outgrown its early twentieth-century cataclysms. Here, according to all accounts, everything was peaceful and contented. The people of Brazil were happy, well-fed, free to think and speak as they pleased, governed by delegates of their own choosing. Not a cloud to mar the horizon of civilization and steady evolution.

"Suddenly, however, without warning, without previous preparation or concerted conspiracy, thousands of widely scattered farmers, workers, professional men, even deputies, went haywire. A savage lust to kill, to slay, seized upon them, brought them headlong upon Rio, the provincial capital."

"Twenty thousand died before the rebellion was crushed," Estoban said grimly.

"Exactly. But when it was all over, those who had revolted did not seem to know what had happened to them. Their stories, taken down by dictaphones in widely separated localities, were remarkably alike. One minute, they claimed, they were going about their ordinary duties, without thought of war or government or politics; the next, something surged in their brains, furious, uncontrollable. As in a blinding flash they realized that they were victims of oppressive tyranny; that their lives were forfeit unless they shook off the intolerable load."

"Mass hypnotism?" suggested Hale.

"It sounds like it," admitted Doug, "but if it is, it's hypnotism on a scale unprecedented in the annals of the human race. Remember that those affected were scattered, unknown to each other. I thought as I read along that there might be a possibility of mental suggestion by means of a radio program. But the depositions are positive. Not one per cent had been listening at the time to the televisors."

"Then what's the answer?" queried Laforte.

But Doug had already lifted the sec-

ond report. "We might stretch the science of the human mind to the cracking point to attempt an explanation of one such manifestation, but here we have half a dozen before us already. As soon as the Brazil revolution came to an abrupt halt, Bolivia and Ecuador flared into interstate war. The Chaco, that ancient, half-obliterated memory, was the pretext. It took three divisions of rocket-troops to bring the two states to their senses."

"We had to resurrect musty history films to determine what the Chaco was," President Winslow said gravely.

"Yet every last peon seemed to know the answers," Doug argued. "Though Ribera assures me not a word of the Chaco dispute had ever appeared in the school-visors. Next on the list of states to succumb to the madness was Mexico. Here the virus—I call it that for want of a better name—took an even more vicious form. Race prejudice, eradicated for a hundred and fifty years. Racial hatred between the Indians and the whites. A sudden explosion of slaughter, of men running amuck, screaming forgotten slogans, slaying with sadistic hate those whose skins were bronzed a different tinge than their own."

"My own brother was one of them," Ribera whispered, for once all volubility gone.

"Then came the anti-church smash-up in Alaska, the youth versus old age movements in Canada. And now, latest of all, and still going full blast, the declaration of war between California and Florida."

HALE COULD not repress a grin. "And over what? The weather, of all things. The Californian newscaster had spoken disparagingly of a hurricane that lashed the Florida coast; the Florida announcers retaliated by raking up all the old floods and earthquakes that had harassed California in the past. When

finally they spoke of the San Francisco *earthquake*, back in the beginning of the twentieth century instead of the *fire*, California promptly mobilized and declared war."

"It sounds funny," Doug Aiken admitted soberly, "but when you think that Miami has already been destroyed by a raiding rocket party and that Los Angeles is in flames, the humor begins to evaporate."

"I don't know where to begin to rush still-loyal troops," declared Burchell.

"I wonder," interposed President Winslow soberly, "whether United Europe has anything to do with these remarkable fomentations. Oothout, the Dictator, has openly avowed for years that his empire requires the rich natural resources of the Americas."

"Oothout wouldn't have a chance," said Burchell with sublime confidence.

Doug shook his head. "The roots of the matter go far deeper than that. There is no science on Earth that would account for this recrudescence of ancient hates and animal passions. Besides, even as I read the reports, a thought struck me. I've often wondered, in tracing the history of humanity, just how to account for the cataclysms of the twentieth century.

"For hundreds of years before that, mankind had slowly emerged from the brute. True enough, the civilization evolved was primitive at best. But at least by the end of the nineteenth century there were certain amenities, a limited amount of reasonableness."

"Huh!" snorted Estoban. "How about the First World War?"

"My point, exactly. An orderly, law-abiding world went mad, fought what they thought to be a cataclysmic war. Then sanity intervened temporarily. It lasted but a few years. This time not merely rulers went crazy, but whole nations. A crop of dictators arose—Hitler, Mussolini, Stalin, Carol, Franco—persecutions on a scale unexampled before

or since. The Second World War crashed into existence, and the Third. Three quarters of the peoples of Europe died; civilization went to pieces."

"I remember the story," interposed Ribera. "If it hadn't been that the Americas were immune from the infection, and promptly formed their present Federation, the Earth would have reverted to the cave man and the brute."

"Even that had its elements of strangeness," retorted Doug. "We were on the verge of precipitating ourselves into the caldron. The then United States and Mexico were threatening war with each other over oil expropriations; Haiti and San Domingo were actually fighting; Chile thought Brazil overbearing; and Canada was ready to hurl its troops overseas to aid its mother country, England. Suddenly a deep calm descended on the spirits of the exacerbated peoples in our hemisphere. Reason, submerged for years, asserted a powerful sway. Without a hitch, without a murmur, a Federation of locally autonomous States was formed, presented a peaceful, united front to the fury that flamed in Europe. When Europe finally emerged from its nightmare, its remnants conquered and fused willy-nilly under the iron hand of Oothout the First, we were too strong for him to tamper with. I say," he went on with slow emphasis, "that both manifestations—the madness of Europe and the abrupt sanity of the Americas—were equally inexplicable from any psychological viewpoint."

"What are you driving at?" demanded Winslow quickly.

"This, Mr. President. I said a while ago that no science on Earth could explain such mass hypnotism. But suppose"—he was hesitating now, feeling his way—"there were a science beyond that of Earth—a superscience that could blanket various sections of the world with intense vibrations, and induce at will either madness or sanity inside the

delicate structures of human brain tissues."

A LONG SILENCE followed. The rulers of the Americas stared at the young psychologist to see if what he said were some ill-timed jest. But Doug's face was grave, deeply concerned.

Then Ribera broke the strained quiet with an explosive snort. "Bah! My young friend, it is you who are mad!"

A babble of angry voices arose. Preston Hale cried sarcastically: "No doubt it must be our long expected visitors from Mars." Laforte swore contemptuous French phrases within his black beard. Burchell twiddled thumbs over the expanse of his stomach and grinned dourly. Even President Winslow lifted his tired head with a slightly shocked expression upon his face.

"It is, of course, a rather difficult explanation to accept, Mr. Aiken," he said slowly. "It's like—uh—invoking the supernatural to hide a confession of ignorance. Surely you must have some evidence to substantiate such a startling statement which you haven't disclosed to us——"

"Not a single item," Doug admitted. He realized he had gone too far. He hadn't intended making this assertion; it had slipped out. But now that he had stated it in so many words, he was convinced of its essential truth. Every fact, every sequence of events, from the beginning of the twentieth century on, was explicable in no other way. "But I intend," he continued with quiet emphasis, "to work on that angle at once."

"And in the meantime," sneered Burchell, "we'll let the Americas disrupt themselves, so that Oothout can step in and join us to his totalitarian empire."

"I didn't say that," Doug retorted with some heat. "You've come to me with a problem in mass psychology. By so doing you've confessed your own in-

ability to handle the situation. You laugh at my solution. Very well then, continue to crush each inexplicable war in the only way you know—by force—until every portion of the Americas, and your crack troops as well, become infected with the virus. In the meantime I'll work along my own lines."

"But there is a fatal flaw in your reasoning," Estoban said earnestly. "Even granting the possibility of such a fantastic business. By your own admission, the first series of events took place from 1914 until 1978. But then there was a gap until now—over two hundred years of interlude. Surely your superscientific phantasms, your extra-terrestrial manipulators, are extremely long-lived, and extremely patient. Why did they wait so long to recommence their plots, and what, after all, is their purpose?"

Doug was taken aback. He frowned. "You've put your finger on something to which I don't know the answer as yet, Señor Estoban," he confessed.

Ribera laughed raucously. There was something hysterical in his laughter. His brother had died—over a slow, roasting fire. Now this young man with a world-wide reputation wanted to divert his vengeance toward vague super-beings whom he could never meet face to face.

The Cabinet meeting broke up in confusion. President Winslow paused a moment after the others had left. He placed a kindly hand on Doug's shoulder. "I have faith in your idea, Mr. Aiken," he said with a certain abruptness.

"Thank you, Mr. President," Doug replied gratefully.

The tired, gaunt man shook his head. "But even if it is true, what could we do about it?"

THE WORDS of the President echoed in Doug's ears long after he had gone. He slumped over his desk, chin

cupped in sinewy hand, thinking furiously. There were two problems confronting him—both seemingly insoluble. The first was to verify his almost incredible thesis as to the cause of the sudden uprisings in the Americas. The second was to find some way of pitting Earthly weapons against such fabulous superscience. Neither of these was in his line. He cast around in his thoughts for someone to assist him in his search.

The very first name that popped into his head was that of Dr. Ernest Coss. Coss was a physicist who was working on the very frontiers of wave mechanics and ultra-vibrations. But Coss would be a difficult man to get started on such a harebrained chase. Doug conjured up a vivid picture of the old scientist. A spare, thin man in his middle fifties, with a gray little beard, a head of still-vigorous hair, and a pince-nez that forever dangled from a black silk ribbon. No one had ever seen him *wear* the glasses, even for his most delicate experiments.

But Coss, though he had known Arnold Aiken, Doug's father, would doubtless snort derisively at such poppycock, even as the Cabinet had snorted. Besides, he was holed up somewhere on the top of a Colorado mountain, engrossed in a series of new experiments. The newscasters had mentioned it only the day before.

While Doug frowned around his office indecisively, the visor buzzed. One short, two long. That meant a special news flash—triple-A news. The young man strode angrily across the room, tripped the visor open. His thoughts were muddled anyway. Might as well try—

The dandified newscaster looked a bit pale. His neatly manicured fingers trembled as he clutched the unwinding steel tape. There were no preliminaries.

"There has been a terrible disaster in Chicago," he said in a queer, choked voice. "Every child, male or female,

under the age of sixteen, has died at the hands of its parents. The great city is a gory shambles. Knives, guns, poison, clubs have been used to effect the frightful slaughter. Even the police joined in the hideous work, butchered their own offspring.

"A correspondent, a bachelor, escaped by fast plane and just radioed the news. He's all shaken up over what he saw. Claims the inhuman parents gloried in their work. Shouted that youth had had its fling long enough; that it was time to put a halt to its encroachments on the prerogatives and privileges of age. It—it's absolutely awful. I don't know what to——"

Doug's face went ashen. Mass murder of the most revolting type—parents against their own children! Never in the history of mankind——

With a gasp he turned off the visor, raced to the beam-communicator. Swiftly he plugged in on the tight-band wave of the Colorado laboratory. His fingers drummed staccato on the metal casing. Coss must——

But the screen remained obstinately blank. Damn! He *must* be there; it was just that he was refusing outside calls. With grim stubbornness Doug put through the emergency flash. By statute this was to be used only in matters of the gravest necessity; the ultra-surge tripped open locked receivers, crashed through to unwilling ears.

The angry face of Dr. Coss looked up startled from the tinted screen. He straightened up from the cyclotron over which he was bending. Around him, to the limits of the scanner, stretched his laboratory, complex with gleaming metal, spun quartz, and buzzing with the whirl of mighty machines.

"Who the devil——?" he started; stopped. "So it's you, Doug," he said with a diminishing asperity. "Glad to see you, of course, my boy. Haven't heard from you for a long time. But just this moment I'm busy as hell on

some revolutionary experiments. That's why I shut off the screens. What's the emergency?"

Doug explained rapidly, yet with a sinking feeling. He could see the physicist's face screw up into sardonic incredulity; his pointed little beard twisted to the left. Once or twice he lifted his inevitable pince-nez on its cord, as if to clap it firmly on his nose, dropped it again.

WHEN DOUG was through, he grinned maliciously. "So those are the ideas of a psychologist, are they? I told your poor father you ought to go into a good, sound science like physics or chemistry, instead of a crackbrained charlatanry like psychology. But you were a headstrong youngster. Now let me tell you something, my boy. I'm a conservative physicist, not a witch-hunter. I'm not going to go on a wild goose chase for ogres or devils or what-have-you on the basis of your silly imaginings. I know damn well that mankind does not require any outside assistance to go haywire every now and then. It's part of our heritage from the knock-'em-down and drag-'em-out cave-man days." Scholarly Dr. Coss used slang and swore with deplorable fluency.

"But listen——" Doug pleaded desperately.

"Nothing doing," the physicist told him flatly. "Besides, I'm on the verge of a most important climax to my experiments. I think I've got something that'll knock my esteemed compeers off their backsides. It's about the nature and origin of cosmic rays. I've evolved a method——"

Doug didn't give a hoot about cosmic rays, especially not just then. But he was a very crafty young man. So he said: "Say, that's swell, Dr. Coss. I've been wondering about that a lot myself for the past few years. In fact, in my own poor way, I've been trying

to study the effect of their radiations on the human mind. Could you give me any ideas?"

Up came the shiny glasses, down they dangled again. The scientist's face lit up. "We-e-ell!" he exploded. "Why didn't you tell me that in the first place? For a psychologist you're beginning to talk sense. Tell you what! Hop your plane out here right away. You ought to make it by five; it's noon now. You'll be just in time to see the pay-off on my final crucial experiment; then maybe I can tell you things that'll stand your hair on end."

Still craftily smiling, Doug Aiken tooled his fast two-seater into the Fifth Level of through-flying. Even Coss had his blind side, his little string of vanity that could be vibrated when properly touched.

Coss' retreat proved to be a remote tableland in the highest Rockies. Around it, for a hundred miles, the mountains tumbled and swirled. The elevation was well over 9000 feet, and the air was thin and piercing. The buildings were simple—a long, low, one-story laboratory; a bunk house of two rooms; and a cook house a little to one side.

Coss met him grinning. One could not tell his age from the springiness of his step, just as one could not surmise the fluent picturesqueness of his speech from his lean, scholarly face and beard, or from the ultra-respectable pince-nez.

He almost dragged the tall young man from the plane. "Glad to see you, Doug," he greeted. "If only for your poor father's sake. It must have been a blow to him to see a son of his go into a wool-gathering science like psychology. He had a fondness for the clean-cut—same as yours truly." He grinned again, impishly. "Now come on in, and see a beautiful example of precision work. No ogres, no super-worldly phantasms. Just straight cosmic rays, all set to yield up their

secrets to the two of us."

"All right, Dr. Coss," Doug agreed amiably. "I'm willing to sit in on the parturition of your cosmic rays." Though the Americas were crashing in ruin about them, he knew that his companion could not be hurried. He must be patient, bide his time. Not for nothing was he a psychologist.

ONCE INSIDE the laboratory and out of the keen wind that swept the plateau, Doug was curious in spite of himself. It was an impressive sight. Some of the equipment he recognized—cyclotrons, atom smashers, Geiger counters, cloud chambers, spiral helices. Others were new to him and—he had a vague idea—to science.

But one huge affair that almost filled the south end of the lab aroused his liveliest curiosity. A spiral helix of huge copper coils funneled upward at an acute angle to make contact with the ceiling. Around it swung concentric rims of steel spaced at regular intervals and supported by stout insulators from the floor. Between steel and copper slanted what seemed to be a hollow-walled funnel of transparent quartz. Within the walls a greenish liquid swirled smoothly.

The curved, nether tip of the helix pointed directly at the shiny base of a small cylinder of metal, tilted over on its side. The cylinder was about six inches in length, and consisted of laminated layers of diverse metals. The first—in contact with the helix—seemed of chromium; the last was a lusterless lead.

Beyond the leaden farther base, and enveloping it, was a Geiger counter and trap; but of a design such as Doug had never seen before. It led directly into a curious oblong box, opaque to the sight, which in turn flared out into a series of lenses. These lenses turned their convexities upon a huge screen of silvery metal that faced the entire south

wall of the lab.

"What is that contraption?" Doug demanded. In his curiosity he almost forgot the real purpose of his visit.

"That, my boy," Coss grinned jovially, "is my ultimate experiment, my masterpiece. In a few minutes now the cosmic rays will yield their last secrets to us, and, through us, to a breathless mankind."

Doug thought wryly that at the rate mankind was going just then, there wouldn't be enough of them left, when the results were announced, to be particularly breathless. But he held his peace.

Dr. Coss, for all his age, hustled around like a schoolboy, his little beard wagging, his never-used glasses dangling precariously. "No one has ever known just what the cosmic rays actually are," he rushed on. "From the earliest days of their discoverers the controversy has raged. To one, they've been pure photon bullets; to another, electrified particles so close to the speed of light that their mass was increased some hundred and thirty times. One chap, back in the twentieth century, almost stumbled on the answer. He considered them as a combination of the two—photon bullets superimposed upon ordinary electrons. In fact, most of the investigators were correct—insofar as they held a little facet of truth in their hands."

He screwed up his bright, piercing eyes, stared at the young man. "I think, Doug," he said, "I've hit upon the ultimate truth—if there is any such thing as ultimate truth."

"And that is——?" the psychologist asked politely.

"The cosmic ray as we know it on the surface of the Earth is only partly a cosmic phenomenon. The true ray is a photon bullet—pure light—but a photon such as we have never experienced before on Earth. It is light of an almost inconceivable energy—in fact,

it has a mass effect of one hundred thirty-six times that of an electron. It obviously does not originate in the Sun or in the stars. Hitting Earth's atmosphere, it smacks square into matter—atoms—oxygen, nitrogen, and so on. The atom smashes. So far so good.

"But now another strange phenomenon occurs, one for which all our previous experience with photons has no counterpart. Instead of going on its own lonesome way, this ultra-heavy light somehow attaches itself to one of the knocked-out electrons, superimposes its energy and speed upon that of the tiny particle, and rides it, so to speak, straight down to Earth." He grinned impishly. "Like one of those old cowboys our narrators are so fond of talking about in their bed-time hours."

DOUG HAD BEEN listening with half his mind. But something Coss had said made him prick up his ears. His heart started to pump oddly. "You say these cosmic photons do not originate in any of the suns we know of? Where, then, do they come from?"

The physicist shrugged expressive shoulders. "That's what this contraption—as you so inelegantly described it—is for. I'm about to trap these errant photons, concentrate them, make them perform for me. That screen, if nothing goes wrong, should deliver us the answer within the next ten minutes."

"But you must have some idea," Doug persisted.

The elderly scientist glared angrily. "Suppose I do," he stormed. "Suppose I think they're light particles from another universe, immensely beyond the confines of our own—perhaps beyond Einsteinian space itself. Suppose I think that universe has properties wholly different from our own. What of it? A physicist has no right to be compelled to spill his ideas before he com-

pletes his experiment. Suppose he's wrong; suppose he's just a doddering old fool!"

"O. K.! O. K.!" Doug said hastily. He was too excited now to bandy phrases. This business of another universe fitted in strangely with his own conceptions. "Didn't mean a thing, Dr. Coss. But how does your—uh—contraption work?"

Mollified, the physicist explained. "The concentric steel loops are under a staggering magnetic load. Between them and the non-magnetic copper helix, through which a current of 2,000,000 amperes is forced, there is a magnetic gradient. The liquid within the quartz shell is a highly complex azo-amino acid, hooked on to a series of silver, thorium and radium atoms. Suspended within the electro-magnetic gradient, it generates a field of force that bends even the hitherto unbendable cosmic rays along the slant of the gradient—herds them, so to speak, directly upon the metal cylinder."

"You employ the cylinder to stop the electron-photon bullets?"

"To slow them down to manageable speeds," Coss corrected. "Even six inches of pure lead would not stop them entirely. By the time they emerge from the lead layer at the opposite end, they're pretty tired. They've slowed to speed that can be handled. The Geiger counter and trap catches them, herds them into greater concentration, assorts them according to energy content, spews them out into the oblong box."

"That's another invention of mine. It dissociates the exhausted electron captives from their cowboy masters, drops them innocuously among receptive protons to form new normal atoms. But the photons, pure now and unadulterated, pass through the lenses, and yield their hidden message in huge magnification on the sensitized screen. Neat, isn't it? That is," he added with a little grin, "if it works."

"By heavens," said Doug violently, "it's *got* to work! Hurry, get it started."

"Hello!" Coss was surprised. "For a psychologist you're pretty impatient. How do you work *your* so-called experiments? With a time-clock?" Then, chuckling, he skipped over to the control panel, threw a single master switch.

THE SMOOTH GREEN liquid within the funnel shell began to glitter like a million fireflies. A blue flame shimmered in a quivering sheet between steel rings and copper helix. A deep-throated hum rose crescendo to an almost unbearable pitch. Ozone rasped at their nostrils. The chrome base of the cylinder danced with explosive sparklets of light. The oblong box glowed a cherry-red.

But both men's eyes were centered on the gray metallic screen. For once Dr. Coss had lost his fluent language. His scholarly face was suddenly pinched and gray. All his fanatical devotion to science was concentrated on this crowning experiment. Doug Aiken strained for another reason. Perhaps, on that still-blank expanse, there might show the answer to the insanities that had gripped the Earth for over two hundred years.

But the gray metal still remained blank.

Doug tried to make his voice casual. "Perhaps you overlooked some minor detail," he said.

Dr. Coss shook his head. He seemed suddenly old, weary. "Everything was checked and rechecked a hundred times," he whispered. "I've just failed! *Failed!*"

"Don't take it so hard," Doug started awkwardly, and stopped. "Look!" he cried excitedly, "something's beginning to form on the screen."

It was only a thin play of vague, amorphous color at first. Yet even as they stared, hearts beating with suffocat-

ing clamor, the thing began to take shape and form.

Cosmic photons—divested of their Earthly electron carriers, concentrated and marshalled in ordered waves—were beating upon that sensitized screen, printing a picture that moved and shifted in sequence with a brilliant life of its own.

A huge globe spun majestically on its axis, filling the screen almost from end to end. Behind it, at the upper left-hand corner, gleamed a small red sun. Slowly the globe moved into clearer focus. There were snow caps at the poles, blue-green water covered most of its surface; soft green continents, spotted with barren yellow patches, divided the oceans.

There was something strangely familiar about that globe.

"Damn!" exploded Coss with startling violence. "It's only a representation of our own Earth, seen from outer space!"

Doug surveyed it with a sinking heart. There was no question about it. There was North and South America; now United Europe swung into view; then the broad expanse of Asia. On a large scale, perhaps, but that might have been due to the magnification, to divergence—

Dr. Coss recovered his aplomb with surprising resiliency. "This knocks sky-high all my theories. The cosmic rays are merely reflected light from our own Earth, thrust back to us from some reflecting medium in outer space that surrounds us like a concentric shell. Hm-m-m! *That* may prove as important a discovery as any I had originally dreamed of—"

Doug had been watching the turning orb with narrowed eyes. His disappointment over this unforeseen replica of Earth contained no such consoling scientific implications as did that of Coss. *His* problem was still as insoluble as ever.

THEN HE started, stared even more closely. "Wait a minute, Dr. Coss," he said in a strangled voice, "That picture your cosmic rays are developing on the screen does *not* represent the Earth as we know it. There is a startling resemblance, it's true, but it's actually another world."

"Eh, what's that?" cried the scientist. "You're crazy!"

"Look closer," Doug insisted. His excitement was rising. "Here come the Americas. Check the coast line. There is no Florida, no Long Island. The two continents are severed—there is no Isthmus of Panama. And watch Europe again. What might have been the British Isles is now merely a knob on the continental coast. Spain has retreated inland; the Mediterranean is wide open to the Atlantic. Wherever you look there are changes—some minor, others quite evident. It's *not* our world," he ended with conviction.

Dr. Coss gulped, reached blindly for his pince-nez, brought it almost up to the thin bridge of his nose before he dropped it violently. His voice was a cracked whisper. "It is Earth, Doug, but a queerly distorted Earth, as if—as if——"

"As if we were viewing it at a different stage of its career," Doug finished for him. "Good Lord!" he added with sudden awe. "You don't mean that we've pierced somehow through time; that we're looking at the Earth of the past or the future?"

Dr. Coss, for the first time in all his life, looked bewildered. "It couldn't be the future; the light photons wouldn't have been born yet. And as for the past, it could only be accounted for on the theory that the cosmic rays have been traveling since their birth completely around the universe. But that, too, is incredible. In the first place, it would smash to smithereens our present conception of an expanding universe. The rate of expansion is such that light, at

its known velocity, could never struggle back to its initial starting point. In the second place, such long-traveling light would be weak, tired; instead, these photon bullets have an inconceivable energy."

"How, then, explain what we see?" Doug demanded. "Unless it's all an illusion."

"It's no illusion," Coss retorted grimly. He seemed to have shaken himself together. Once more he was the efficient scientist. "And I'll get the proper answer fast enough." Already he had whirled to his lenses, was fiddling with their controls.

"What are you going to do?"

"Step up the magnification. Get a detail picture of some part of that strange Earth. Find out what manner of civilization it possesses—or lack of one."

The lenses swung smoothly into new combinations. An electronic scanner flickered into place.

At once the globe bubbled out, faded from view. In its place something swirled vaguely. Coss focused more sharply.

An exclamation broke from both men.

A MIGHTY city had taken shape and form upon the screen. A city such as neither had ever seen before. A city of dazzling white; of fantastic structures that soared miles into the air, graceful in every line, smoothly curved and rounded. The sky above was filled with swift-darting cubes of crystalline texture. Within their hollow depths sat human-seeming creatures, clad in lustrous purple, lofty of brow, benign of countenance. The spacious thoroughfares beneath swarmed with life and laughter.

"No city like that, no people like that, ever inhabited the past of our Earth; it must be the future," Doug asserted positively.

"But the future has not come into being yet," cried Coss.

"How about time as a fourth dimension?" argued Doug. "Cannot all the time-states lie coterminously in a four-dimensional universe? Cannot the light from a future state, by some unknown access of energy, have achieved sufficient strength to have broken through the spatial dimensions?"

"Plausible, but unscientific," stormed the physicist. When he was most in doubt, he became most heated. Knowledge brought calm to him. "Too many laymen have that erroneous idea about the function of time. In mathematical analysis it is found convenient to treat it as another dimension; but that does not mean that it is of the same order as a spatial dimension. Space is reversible; time is not. It is a function of space, rather than a separate entity."

"Yet that is Earth out there; and it is *not* the present," the young man insisted.

"True enough," admitted Coss, fiddling with his glasses. "There's a mystery somewhere. If only——"

He reached for the lens controls, shifted their positions once more. "I magnified a portion of what seems like the Americas," he explained. "I'm shifting it over now to the segment that resembles United Europe."

Even as he spoke, the scene faded, swirled, and clarified. The light prickled over another huge city, mighty, widespread, but curiously different from the white rounded aspirations they had just quitted. Here were no curves or graceful arches. Here the buildings were jagged, angular, uncompromising in their harsh lines, almost brutally unornamented.

Shining cubes likewise populated the air; but within them were men of a darker hue, saturnine of feature, sharp-nosed, thin-lipped. The wide streets were filled with silent crowds, each man intent upon his destination, speaking not

to his neighbor, yet looking furtively to the right and to the left.

"Strange," murmured the psychologist. "Even the characters of the two peoples seem but the future of the Americas and of Europe. Yet still you say that——"

In his anxiety to observe the screen closer he had leaned forward. In so doing he contacted one of the lenses. It swung slightly on its gimbal. At once the picture faded, misted into new form.

"Sorry!" he apologized. "I didn't mean to——"

But Coss had grabbed him fiercely by the arm. "Ssh!" he whispered tightly, "look at that."

Blurred streaks of light raced across the screen diagonally. Curious shimmers that twisted and angled in strange dimensions. At the lower right-hand corner they seemed to emanate from a shining cube, within which a hawk-faced man stabbed unknown controls and smiled a lean, sardonic smile. Both man and cube were eerily blurred, and wavered out along the streaking light.

Each time his finger touched a knob, blue streaks of flame lanced out from the enclosure.

DOUGLAS AIKEN felt a shiver ripple over his lithe body. Close to that shimmering cube, truncated by the edge of the screen, was a mountain. Against its rock-hewn edge was silhouetted a face—stern, calm, immobile with the majesty of centuries.

"Great heavens!" he exclaimed. "I'd recognize that anywhere. That's the Great Stone Face in Franconia Notch. That's New Hampshire, back here on Earth. Do you understand, Dr. Coss?"

But the scientist did not answer. All his gaze was concentrated on the upper left-hand corner of the screen. There the tortured streaks of light seemed to flow and terminate within a segment of a huge, monolithic building.

The roof, of transparent texture, per-

mitted their gaze to follow down into a chamber that receded in a misty blur. But sharply focused by the penetrating rays was a figure. Authority radiated from his lean, furrowed features. A mop of hair fell over his low forehead. His head was slightly to one side, as though he were listening. His thin lips opened and he seemed to answer. A satisfied smile made more murky the darkness of his face.

Then, suddenly, the streaking light collapsed upon itself, retracted toward the lower cube. As it did, the screen went blank and quiescent.

"I'm beginning to understand," said Doug in a strained voice. "My first hunch was correct. I never dreamed I'd get the verification from your experiment."

Coss blinked. "Eh, what's that?" The pince-nez dangled unheeded.

"It's shaping up," Doug reiterated grimly. "I knew no Earthly science could have caused those psychological reactions our world has been witnessing. Here is the proof. That chap in that queer cube close by the Great Stone Face is an emissary from the other Earth. They're far ahead of us in civilization and science—if not in the more elemental qualities of tolerance, pity and humaneness. For some reason he has come over to us, with his devilish controls over our primitive brain structures, and is deliberately utilizing them to stir up madresses, insanities, destruction, among the peoples of Earth. But why?" He clenched his hands, opened sweaty palms again to run fingers through his disordered hair. "Why should these people of our future Earth desire to destroy their own ancestors? Don't they realize that if they succeed, they must inevitably destroy themselves?"

Dr. Coss was a stubborn man, up to a certain point. "It still sounds crazy," he muttered, and strode with a determined air to the silent screen. "We'll settle this once and for all," he an-

nounced, as he flung wide the safety catch.

A newscaster, harried, distraught, was in the middle of his text. He dared not lift his eyes from the steel tape as it poured out its dreadful tale before him.

"The farmers of New Hampshire and Vermont are pouring by the thousands along the speed-roads toward Maine. They claim that the latter State is making secret preparations to divert their tourist trade from them this summer. The Maine authorities deny the report indignantly—so does Preston Hale, Secretary of Communications. But the denials have made no impression on the maddened farmers. They are determined to extirpate every human being in their neighbor State. Government troops are even now on their way to head them off.

"This is but the latest of a series of inexplicable outbreaks that have troubled the Americas since——"

DR. COSS snapped it off. His shoulders, erstwhile erect, cocky, now sagged. "I'm sorry, Doug," he whispered, "for having mocked at your hunch. It sounded fantastic; it still sounds the same. But it's the truth. There is another Earth, somewhere, farther advanced than ourselves in science. Long before I stumbled on my explanation of cosmic rays, they had found a method of contacting our Earth. They are deliberately destroying us for purposes of their own. The only reason we saw that fellow in New Hampshire was because he was in communication with his superior. We caught the reflected light waves on our screen."

Doug's face was a blazing mask. Without a word he started for the door.

"Hey, where are you going?" yelled Coss.

"To get him," the psychologist flung over his shoulder, "before he can do any more harm. My plane can hit 500

miles per hour."

Coss was fast for a man of his age. He caught the younger man in two quick leaps. "You can't do that, you fool!" he panted. "With his superscience he'd destroy you as easily as he's destroying all the Americas."

"But we've got to do something."

"Wait a minute." The physicist's beard was rigid with thought. He fumbled at his glasses. "Those queer blurs of light that streaked out from him, from his vehicle. As though they were both being sucked along some incredible path. They must have some meaning."

"Well?"

"If only I could——" Coss' mouth sagged; his eyes widened with surprise. "Good Lord!" he husked, talking to himself. "It's impossible—insane—yet it fits perfectly."

"What fits?" demanded Doug impatiently.

Dr. Coss sank into a chair, mopped his brow. "I've got the answers—to everything." He bounced up again like a jack-in-the-box. "Of course!" he almost shouted. "I've been a ninny. The solution was staring me in the face all the time—right down my alley, too."

"Stop talking riddles."

"I'm not. You were partly right, my boy, partly wrong. That other world—Ultra-Earth, we'll call it—is connected with ours, all right. But it's neither our past nor our future."

"Then what the devil is it?"

"I can only explain by talking wave mechanics. We've known for a long time that an electron, a proton, all the constituent elements of matter, are in fact wave-trains in space."

"Sure."

"But all the mathematical analyses of their properties call for more dimensions than we have in normal space."

"I thought the physicists disregarded them as mere mathematical fictions," Doug protested.

"We did—and the more fools we!

For now it seems that those fictions portray physical realities."

"You mean——?"

"I mean," retorted Coss impressively, "that every electron, proton, and so forth, that exists in our bodies, in our Earth, in our universe, is but a small segment of the total reality of that electron, proton, and so forth. We are only the tag end of vast wave-trains that continue on and out of our puny three-dimensional universe—to a greater reality, as a matter of fact, in a series of other dimensions."

DOUG AIKEN staggered a bit. "According to that, Ultra-Earth is but the other end of our own Earth; their universe the continuation in ultra-dimensions of our universe. Why—why, even you, Dr. Ernest Coss, myself, Douglas Aiken, have counterparts existing simultaneously with ourselves on that other Earth!"

"Exactly!" In his excitement Coss actually caught up his glasses, adjusted them to his nose. With a quick move he dropped them again, swinging on their black silk cord. "They're closer to us than a brother, bound to us by stronger ties than father and mother." He grinned. "Perhaps even that bird we just saw at Franconia Notch is Douglas Aiken himself."

"Or the very righteous Dr. Ernest Coss," amended Doug. "But wait a moment. Your theory falls flat. They are *not* the same. We watched their cities, the people in them. Even their Ultra-Earth is different."

"That is explainable too. Obviously the shift of the wave-trains into higher dimensions involves a time difference. Time, being a function of space, would naturally have a different meaning in their ultra-space. Hence they might have been more primitive than ourselves, or more advanced. It seems," he added ruefully, "they are more ad-

vanced. Our universe, unfortunately, represents but the lower end of the electron wave-trains; *they* are the higher level."

Doug nodded his head slowly. "That accounts for a lot. The streaky blurs we saw emanating from the man in the cube were the electron-trains made visible—his path of translation from his end to our own. Instead of shifting himself back into his counterpart on Earth, he bent the trains through the dimensions to reach here in person."

He spoke faster, more breathlessly, as the dizzying concepts unfolded. "Their Europe, their Americas, are but exaggerated counterfoils of our own. Their characters, their psychologies, would also follow suit. While their science is on a vaster scale, while their civilization would be further advanced, nevertheless, the *ratio* between our matter-waves on this side must necessarily be transferred intact on the other side."

"For a psychologist you reason rather well," approved Coss.

"Wait; I'm not finished. Everything is clear now. The Americas over there are, therefore, ordinarily peaceful, democratic, liberty-loving. Their Europe, on the contrary, would be totalitarian, under the iron grip of a dictator."

"I think we saw him," agreed the physicist, "in consultation with his emissary here."

"This dictator," Doug pursued the analogy, "would have approximately the same attitude toward his neighboring democracy as William Oothout, *our* European Dictator, would have toward the Americas. He'd resent it fiercely, as an ever-present invitation to revolt on the part of his own subjects; he'd cast greedy eyes toward its rich resources. But"—and now Doug's voice rose triumphantly—"the Americas at both ends of the wave-trains are too strong for a frontal attack."

Coss screwed up his face, waggled his

little beard. "What are you driving at?" he asked sharply.

"I'm putting myself in that other Dictator's shoes," said the young man more slowly. "My adversary is too strong for me. His weapons are as good as mine, or better; his people immune to the propaganda I employ successfully in my own realm. Nevertheless, I must overcome him somehow.

"In this dilemma, one of my scientists makes a discovery. He finds, even as a certain Dr. Ernest Coss discovers later in a different universe, that Ultra-Earth is but a portion of infinitely extended matter-waves; the major portion, it is true, but with physical counterparts on a reduced scale in an other-dimensional universe.

"On further examination, this lesser Earth, with its similar set-up and subdivisions, is proven to be at the younger end of time—more primitive, with weaker weapons of offense and defense."

THE ELDERLY scientists let out a most boyish whoop. "Doug!" he shouted, "I take everything back. I'll never run down psychology again. It's a noble science. You've hit the nail on the head. This Ultra-Dictator of yours, since he can't attack his enemy directly, hits him from the rear. He translates his emissaries into the lesser universe, utilizes his super-weapons to stir up dissensions, mutual murders, mass slaughters, among the counterparts of his own opponents. By so doing, by weakening or eliminating the lower ends of the electron-trains, he necessarily causes profound disturbances at the top ends—which represent the people of Ultra-America."

"Exactly," countered Doug, taking up the tale again. "Once he has softened them sufficiently, he will attack and conquer. By the same token, Ooth-out here will also be in a position to

conquer. Even the strange madness of the Three World Wars becomes clear now. No wonder the peoples of our Earth seemed moved by compulsions inexplicable by reason or sanity. Their electron-waves had to follow willy-nilly the deliberate pattern imposed on them by what was taking place on Ultra-Earth."

There was a moment's silence. The two men stared at each other.

"It's a devilish scheme," Coss whispered.

"We've got to fight it," Doug declared energetically.

"But how? We're helpless children in the hands of such superscientists. They do with us as they please. Evidently they can even compel our minds by a species of direct wave control, as well as along their own matter-trains. What chance have we?"

"If only," Doug murmured thoughtfully, "we could enlist the aid of our counterparts in Ultra-America. It's their battle as well as our own. If we die, inevitably they must die as well."

Coss shook his head mournfully. "Obviously they haven't the slightest idea of what is going on. Ultra-Europe's discovery of our existence must be a closely guarded secret."

Doug's eyes narrowed. He stared speculatively at the physicist. "It is up to us then," he said with calm finality, "to warn them—as much for our own sakes as for theirs."

"You're crazy," his elder declared vehemently. "There is no method known to man——"

"You," the younger man interrupted softly, "are this Earth's greatest authority on wave mechanics. If scientists, constrained by a brutal dictatorship, no matter how technically far they may be advanced, can have discovered a method of translation into our universe, there is absolutely no reason why you, a free spirit, can't discover a similar transla-

tion into *their* universe."

"Now I know you're crazy!" Coss shouted.

Doug Aiken grinned. "We start at once," he announced.

THE NEXT TWO months were days—and nights—of nerve-racking toil. Dr. Ernest Coss shut himself up in his mountain laboratory, barely ate, never slept. Two gaunt-faced technicians, sworn to secrecy, assisted him. Doug Aiken, without sufficient knowledge of these rarefied reaches of pure science, was liaison officer to the world.

His fast rocket plane shuttled back and forth between the Colorado tableland and the technical supply houses of the Americas, carting unusual machinery split up into small sections, purchases from widely scattered houses; bringing all equipment in under the mantle of night.

"It's important," he answered the scientist's vigorous remarks on these wasteful tactics, "that no one person have any suspicion as to what we're doing. There is no telling when the emissaries from Ultra-Earth may gain control of their minds, and extract disastrous information."

It never dawned on Doug that perchance his own brain or that of Coss might also come under the directive wave-control.

Every night he asked Coss the same question, and every night received the same monotonous answer.

"No progress! We're just groping in a fog. The theory is simple enough." The tired, haggard man grinned a twisted grin. "The tracks are there, the rails are laid. Every particle in our bodies is connected by unbreakable wave-trains with our homologues in the Ultra-Universe. All we have to do is find a method of stepping up those tenuous trains, create such a head of potential in ourselves that we'll slide

along those tracks as though they were greased." The grin grew bitter. "That's all, my boy, that's all."

In the outer world the tragedy was deepening. Neither Doug nor Coss could ever get another glimpse of Iskra again on their cosmic-ray projector, but the field of his shifting operations was easy to follow. There would be an outbreak in southernmost Patagonia, followed almost immediately by a wave of madness that sent the salmon fishermen of British Columbia tearing at each other's throats.

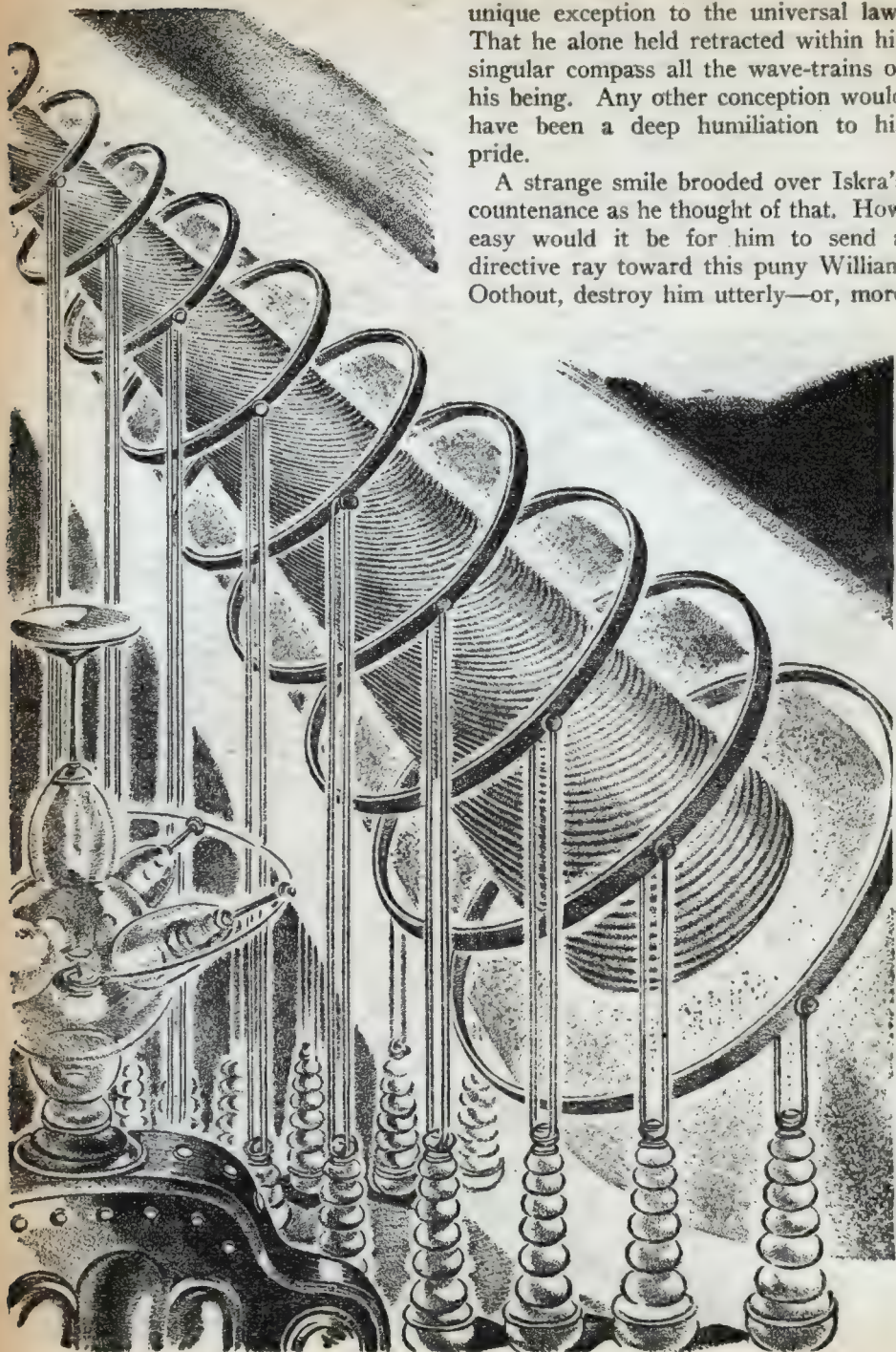
Iskra, seated in his cube, smiled sardonically, and sent forth the blue stabs of flame that were controlled vibrations attuned to his command. They impinged upon the brains of his victims, modified the vibratory periods of specified neurones according to a predetermined pattern, opened up new paths of thought, closed old synapses—and behold, masses of men were but tools for his skillful fingers, willed along by forces beyond their control.

Iskra was satisfied. Matters on this Infra-Earth, this tag end of his own great world, were approaching a proper climax. Even Ontho, seated in his palace within the capital city of Ooroo-pah, had nodded grudging approval. Soon the repercussions would appear within Amrique; and the day of Ooroo-pah would have arrived. He, Iskra, had been promised the governorship of that hated land.

Sometimes he wondered who his degenerate counterpart might be on this degenerate planet. He knew, from his observation of Infra-Earth, that William Oothout, Dictator of United Europe, was doubtless the lesser representation of mighty Ontho. Of course, he had never dared transmit the information. In spite of Ontho's knowledge of science, in spite of his awareness of the wave-train shifts into these lower dimensions, he somehow clung stubbornly to

the delusion that he, Ontho, was a unique exception to the universal law. That he alone held retracted within his singular compass all the wave-trains of his being. Any other conception would have been a deep humiliation to his pride.

A strange smile brooded over Iskra's countenance as he thought of that. How easy would it be for him to send a directive ray toward this puny William Oothout, destroy him utterly—or, more



subtly still, force him into gibbering madness and vilest self-immolation. What strange effects such a course might have upon the proud counterpart who ruled in Oorooopah, who treated all his subjects, even Iskra himself, as unimportant dirt beneath his feet!

Iskra played with the idea, rolled it on his tongue, coddled it in his brain, surrendered it in reluctant fear. Who knew what the end-results of such a stroke might be, what the repercussions

"Wait—" Doug called. "That's not Earth—there's a startling resemblance, but it's **ANOTHER WORLD!**"



on himself! The iron rule of Ontho was not conducive to daring in his subordinates.

Furthermore, Iskra considered, he did not know who he himself might be on this inferior plane. Sometimes he wondered, and thought to translate himself along his wave-trains to seek him out; but each time he shuddered away from the thought. Who knew what wretched caricature he might be! He, Iskra, would always have before him the picture of that vile distortion of himself; it would be profoundly disturbing. It was better not to know——

DOUGLAS AIKEN was forced to take time off from his unrelenting labors to answer the increasingly frantic calls from the Cabinet of the Federated States of the Americas.

They were at their wits' ends. "For Lord's sake, man, we've been relying on you to find some method of stopping this madness," exploded Secretary Hale.

"You've let us down," nodded Burchell, Secretary of Defense. His rock-hewn face was lined and seamed now. His slow-moving brain found it hard to grasp what was happening.

Only President Winslow said nothing. But the brooding pain in his sunken eyes was more of a reproach to Doug than all the castigations of the others.

Yet he dared not tell them what he and Coss had discovered; what their desperate, fantastic plans actually were. Even they, sooner or later, might come under the compulsion of the emissary from Ultra-Earth.

So he put them off with vague explanations, with vaguer promises. He had lost caste with them, he realized that. Donald Burchell openly snubbed him at their final conference, declared he was through with quack psychologists. Force was what was needed, force to the uttermost. He intended

gathering his crack rocket-squadrons, hurl them mercilessly upon all offenders, wipe them out root and branch. He was tired of their present policy of babying madmen, simply because young Aiken had assured them they were not responsible for their actions.

But even as he made this angry speech, unwontedly long for him, to an assemblage of men whose nerves were almost as frayed as his own, the private communication-unit buzzed. A wave of overwhelming news broke about them, swept all rancor into oblivion.

The crack rocket-squadron, on which Burchell had so pathetically relied, had suddenly and without warning fallen upon each other with hurtling tons of exploding metal and atom disruptors.

Even as they sat, speechless, stunned, the unit buzzed again. A tightband report from a secret agent in United Europe. News of the gravest consequence. William Oothout, hitherto cannily biding his time, was rushing preparations for a swift descent upon the helpless, chaotic Americas.

The gaunt President buried his face in his hands. "This is the end," he whispered. "Our beloved America is lost. All civilization will disappear."

Doug Aiken came to his feet. He had listened quietly to Burchell's diatribe because he must. But Winslow's despair cut him to the quick. He lost his head.

"It's not all over yet," he cried. "We know what's responsible for this strange madness that has attacked our hemisphere. Even now, Dr. Coss is working on a method of putting a stop to it. Lord grant that he'll be in time."

They were on their feet, clamoring, crowding excitedly around him, hurling excited questions.

"Why the devil didn't you tell us before?" expostulated Estoban. "If Dr. Ernest Coss is working on the problem,

we should have known."

"Have you convinced him of your fantastic business about super-worldly creatures?" demanded Laforte, his voice edged with sarcasm.

But already Doug was cursing his own blabbing. Now that others knew their secret, it would only be a question of time before the super-emissary in his shiny cube would trace it to their hideout in the Rockies. And then——

HE SNATCHED his hat, muttered unconvincing words of denial, and rushed out of the Council Chamber, racing for his plane. He had made a fool of himself, had relaxed his guard for one disastrous moment.

He warmed up the jets with preliminary bursts of flame, took off at a reckless pace. With their secret designs now known to so many, with the Americas crashing into ruin, with Oothout ready to move in and take over, nothing much mattered any more. Even if, by some miracle, Coss did discover a method of translation into the Ultra-Universe, it would be too late. Both worlds would already have been overwhelmed by the Dictators.

He soared hastily to the Fifth Level, pointed the nose of his shining plane toward the west. Pittsburgh was a smoking shambles beneath him. The flat lands of Ohio were dark with battling men. At St. Louis he swerved in a wide detour to avoid the suicidal crash of opposing rocket-troops. Denver mourned its slain.

Wherever he went, conflict raged between brother and brother, father and son, State against State. The madness had seized them all, overlaid all reason, the common ties of race and blood.

Then the Rockies tumbled beneath him, grim, solitary. He was nearing his destination. But within his heart was only anguish, a terrible despair.

"Too late!" he groaned. "Even if

Coss does find out——"

The familiar plateau lifted underneath; the thrice-familiar laboratory hove into view. Swiftly he descended.

No one came out to greet him, as was usual. Neither Dr. Coss nor his silent assistants. A strange fear gripped Doug. Had something happened to them, had they, too, succumbed to the induced madness and slain each other?

The rockets were still firing when he leaped from the plane, pelted toward the laboratory. Inside he heard new sounds; the throbbing beat of power, endlessly repeated.

"Coss, where are you?" he cried, and flung the door wide. Then he stopped short.

The laboratory was bathed in an eerie blue light. Within the very center of the long, low-ceiled room, where before his departure east two days ago there had been a clutter of tangled parts, there was now a cleared space that held but a single object—a shining, shimmering cube of transparent structure, hollow within and large enough to house a man standing upright.

Around the cube were grouped parabolic reflectors, their lenses concentrating a deep-blue glow upon the crystal shell. Three men bent eagerly over a maze of cables and electron tubes of queer design. Their fingers moved in frantic haste—tightening, adjusting, making last minute changes. So absorbed were they that they had not heard Doug's tumultuous entrance, his first shout.

On the farther wall the gray metallic screen was alive again. Ultra-Earth moved majestically on its axis. Amérique was calm, unsuspecting.

A wave of relief flooded Doug at the sight of the three men. His knees were suddenly weak; he leaned against the door jamb for support.

"Thank Heaven you're all right," he said. "For a while I thought——"

Dr. Coss swung up startled. His eyes blinked from the shifting of attention. His face was haggard with days and nights of unremitting toil, but excitement overlaid all fatigue.

"Doug, my boy," he cried exultantly, "you're just in time. I've got it! I've got it!"

"Got what?"

THE SCIENTIST flung a wide hand at the glowing cube. "A replica of the super-world machine. I stumbled on it by accident, just as I was giving up all hope. It's made of fused quartz, divided into three thin layers. Each layer has been polarized at a different angle." His outstretched arm circled the reflectors. "I've stepped up vibratory power to a degree hitherto undreamed-of by super-imposing the energy of the photon bullets from the Ultra-Universe upon an electro-magnetic field of tremendous intensity. The resultant vibrations are directed in parabolic beams upon the polarized quartz, are twisted through three angles, and fling out from the last lamination in a fourth angle."

"And that angle means——"

"A new dimension entirely," crowed Coss. "The dimension of Ultra-Earth. The cube, all its contents, will be forced into that angle. A tremendous head of energy, a huge potential, will flood every single particle of matter." He rubbed his hands jovially. "We'll slide along our own electron-waves like cars on greased tracks. We'll land smack in Ultra-America, on a tableland corresponding to our own. It'll be a simple matter to spread our warning, get aid."

For a moment the younger man's pulses hammered. Then he remembered what he had heard, and he said despairingly, "It's too late. A week too late."

Coss and his assistants stared at him. They had been too busy even to listen to the newscasts. "What do you mean?" they chorused.

For answer Doug strode over to the visor-screen, tuned it on.

The newscaster's tie was askew, his clothes rumpled, his voice hoarse with strain.

"The reports are coming in thick and fast," he said huskily. "United Europe is mobilizing. Ten thousand rocket-cruisers are ready to take the air. Oothout demands our unconditional surrender. The Cabinet is in emergency session. More alarming news pours in from all over the Americas. In Peru the people are yelling for Fascism. Minnesota has formally seceded from the Federation. Alabama is in the throes of an orgy of lynching. President Winslow has called on all good citizens——"

Doug snapped him off, said quietly, "Now you know why it is too late?"

Red suffused the scientist's face. "It's never too late." He was literally dancing with rage.

A quiver ran over Doug's lean form. There was an open slide-panel in the glistening cube. He walked quietly in. "When do we start?" he demanded.

Dr. Coss beamed. His trim little beard wagged. "Good boy!" he grinned. "We start at once. Jones and Satterlee have their instructions. They know how to handle the power."

He moved in with a little dancing step beside the young psychologist. There was barely room for the two of them. He nodded his head to his grave-faced assistants. He opened his mouth to issue the final instructions . . .

ISKRA, hovering in his ultra-cube over Pikes Peak, manipulated his controls. The stern, fanatical visage of Ontho faded from his screen. The long, twisted waves retracted into this alien lesser universe of time and space. Yet the glow on Iskra's face persisted. Ontho, with unheard-of condescension, had praised his work. "Amrique," he had said, "is weakening. Strange, mys-

terious ailments attack their people. They are puzzled, alarmed. They cannot understand what is taking place. I have issued secret orders. Our forces are ready. The day of Ooroopah has arrived!"

Already Iskra envisioned himself as Governor of Amrique. He rolled the official title speculatively over his pointed tongue. It had a splendid sound. His dark hand clenched. Always had he hated the smug, superior beings of the other side and raged in impotent silence against them. Now——

He flicked on the orange-metallic sono-visor. He would see for the last time what was happening with these lesser levels of the hated Amriquians. The visor glowed. The Rocky Mountains spread out before him like a frozen sea. Desolate, bald, with shattered towns dotting the heights. Far over on the edge, glittering rocket planes met in head-on collision, rained to the ground in a dazzle of flame and molten metal. He smiled sardonically. His control vibrations were working perfectly. They hurtled across the time-space of this subsidiary universe, bearing upon them the impress of his commands, impacted upon the weaker brains of these subordinate creatures, impelled them to his will.

A little glowing spot almost within the center of the visor-screen attracted his attention. It was intense, ablaze with generated power. He frowned. In all his scanning of this Infra-Earth, he had never noted such a manifestation of energy before. It almost rivaled the surge of his own vibrations. So intense was it that it clouded with a halo of reflected light its generating source.

Iskra stepped up his own power. The orange concavity flamed with almost insupportable luster. But the glowing veil faded before the mighty magnification, stripped to a pinpoint of blue dazzlement.

A plateau sprang into view. A long,

low building, flanked by two small cabins, appeared. Within the larger structure flared the focus of disturbance.

Iskra started violently. Obscure phrases tumbled from his lips. Bewilderment spread over his saturnine features. Instinctively his finger stabbed toward the octahedral knob that governed the translation-trains, the ultra-dimensional waves of himself and his vehicle that would send them all hurtling back to the safety of Ooroopah.

For who else but a denizen of his own Universe could have duplicated his triple-polarized cube? Who else but an Amriquian could have come secretly into this lower end of their dimensional wave-trains without his knowledge? Which meant that Ontho's plans had been discovered—and all was lost!

Then the first frantic fear ebbed from his brain. His stabbing finger poised. New images impressed themselves. Those two creatures within the ominous cube were not Amriquians; they were mere primitives from this lesser continent of the Americas.

Rage succeeded his former fear. Rage at the audacity of these puny men in duplicating his own invention, rage at himself for having succumbed, even if only for a moment, to unworthy fear. That rage clouded his reactions, caused his finger, as it darted viciously toward the command-control, to shift its aim by a tiny fraction.

A blue bolt of vibrations seared out from the cube, leaped across the mountains toward its destination. But the bolt of induced hypnosis was a trifle askew!

DR. ERNEST COSS opened his mouth to issue the final order. Jones and Satterlee, expectant, were poised at the switches, hands clutching at the huge handles. Coss had drilled them carefully in their tasks. As he gave the command, the switches were to close.

The panel in the cube would slide into hermetic ensalment; the photon energy in the reflectors would step up to incredible figures; the rays would beat out upon the laminated quartz, shift through three planes of polarization, and erupt both cube and contents into a fourth-dimensional angle in streaks of elongated electron-trains.

But even as his mouth gaped for the final order, something happened. His eyes suddenly glazed; his gray little beard stiffened; his body went rigid. New words, not of his original choosing, issued from his lips.

"Wait!" he cried. "Get away from those controls, Jones and Satterlee!" And he leaped for the still open slide.

Quick as he was, Doug was quicker. His arm darted forward, caught the scientist by the shoulder. "Hey, what's the matter?" he queried in surprise.

Dr. Coss wriggled in his grasp. "Matter enough!" he retorted. "I've changed my mind. I made a terrible mistake. There was a flaw in my calculations. We'd be killed in a jiffy if those switches closed."

Doug did not release his grip. He stared at the struggling physicist, saw the glazed expression of his eyes, maneuvered his lithe, athletic body between him and the panel.

"Funny!" he murmured. "Everything was O. K. until just this moment. Just when did you decide you had made a mistake?"

"I knew it all along," Coss screamed back at him, his face distorted with anger. "Let me go, you idiot!"

The younger man thrust him violently back against the farther wall, flicked a quick glance at the gaping assistants. They had frozen in their positions.

"Know anything about an error in the calculations?" he demanded.

Satterlee shook his head, puzzled. He was a short, stout man with a pinkish face and horn-rimmed glasses. "We checked Dr. Coss' figures a dozen

times," he said doubtfully. "Everything was perfect. But if he says——"

"I say it again, you fools," yelled the scientist. His eyes now held a mad glare, his body hunched to spring at his companion, and his hand clenched convulsively. It caught on the dangling pince-nez. There was a sickening crunch of glass. Blood spurted from the palm and fingers. The shattered lens tinkled to the floor.

But he did not seem to mind, did not even know. He sprang.

DOUG, for all his extra height and wiry body, staggered back against the open slide under the impact of that bulletlike rush. Then, with a mighty effort, he regained his footing, sent the maddened man back with a swift, straight-arm jab.

The blow jarred Doug to his depths. He loved the man, respected him as a genius in super-physics. But the safety of Earth came first; the lives of millions of his fellow-men were involved. He knew now what had happened to transform Dr. Coss to this pitiable state; he knew that any moment Jones and Satterlee, as well as himself, might be reduced to the same will-less state. He must act at once.

"Close the switches!" he flung back over his shoulder. "Hurry! It's life and death. Pay no attention to Dr. Coss. The madness has got him too. Hurry!"

Satterlee looked foolishly from one to the other. He scratched his head. "Well, I don't know——" he started doubtfully.

But Jones, angular, dour of visage, understood. He reached out both long arms, thrust the rotund little assistant aside. His bony fingers clutched at the switches, jammed them down on their knife-edges with quick, firm strokes.

"God bless you," he cried, "and good luck!"

The panel slid into place; there was

a blinding blue blaze. Doug flung his arm involuntarily over his eyes to shield them from the dreadful flare. He heard his companion's great cry.

Then every atom in his body seemed to disrupt. He seemed lifted to unimaginable heights, to be dropped swiftly and with breath-taking speed. An answering cry burst from his own lips.

For Coss, eyes staring, still glazed with a will not his own, was blurring, elongating, streaking out to an incredible infinity in long streamers of pulsing vibration. The enclosing cube stretched along distorted paths, reached out toward an unknown destination. The laboratory, the encompassing reflectors, the gaping assistants, rushed away from them, vanished into nothingness. They were alone in a curvilinear void, suspended in neither space nor time; they were a whiz of flaming waves, probability patterns along which they fled without particular locus, roaring through negative infinity into strange, multi-spatial dimensions.

There was a grinding crash, a super-human rending of muscle and bone. Light flared and died and flared again.

They had broken through into a new space and a new time!

Even in his agony, Doug had never taken his dissociated gaze from the blur-

ring form of his companion. But now Coss seemed to diverge from him, to streak away through cube walls, through the illimitable gray beyond, and vanish in a rocketing shower of parallel meteors.

Douglas Aiken tried to reach out to stop him, tried to cry out his protest. But neither arm nor tongue obeyed the will of his dissociated brain. As though there had been an open switch on the tracks of their electron trains, Coss diverged from him and vanished.

The next instant—or it might have been eternity for all Doug knew—the headlong rush collapsed, a huge inertial weight tugged at his potentials, attraction and repulsion strained to counter-balance their thrusts. A face leaped into the orbit of his tortured vision, pulled away with a startled cry. A face surrounded by glistening walls of immaculate purity; a face attached to a lean, lithe body; a face that seemed strangely familiar for all its alien contours.

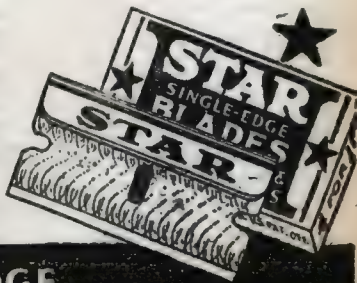
Then the universe crashed heavily upon him and he toppled to the ground, unconscious. His last remembered thought was one of wonder at the vanishment of the cube in which he had completed his tremendous journey into the Ultra-Universe.

TO BE CONCLUDED.



WARNING TO CRANKS

If you want to stay cranky, look out for Star Single-edge Blades! They're so keen, they're so gentle with a tender skin that if you're not careful, you'll be smiling all over. Famous since 1880! Star Blades cost little: 4 for 10¢. Star Blade Division, Brooklyn, N. Y.



STAR SINGLE-EDGE
BLADES 4 FOR 10¢
FOR GEM AND EVER-READY RAZORS



HARL VINCENT

Returns with a sequel to a popular story of a beast that was almost human! Miracle, like his creator, appears again with

Return of the Prowler

IN two or three years, twenty-third century United North America had not changed noticeably. Its huge steel-and-crystal-enclosed City States remained at about their normal activity,

their hundred-level-high beehives of humanity keeping to the same routine; their robots and robot police working as usual; the upper-level plutocrats as smug as at any time in the span of the century.

Science progressed but little, though what advances were made had been of importance. And in lines little known to the general populace.

The wastelands—those vast spaces of alternate jungle and prairie land between the cities, bare of human population and frequented by a steadily decreasing number of wild animal life specimens—changed by imperceptible degrees only. They were shunned by all humankind and presently would be devoid of straying creatures as well. Everything had gone to the cities.

Everything in human or semi-human form but the Prowler.

A great, sleek cat-animal with human mind and instincts, the Prowler had roamed the wastelands for he did not know how many years—two or three, he was not sure. He had lost all track of time since that miserable day when he had watched the skyplane carry away with the man she loved, the woman with whom he had acted so many times in public and whom he had adored almost as a man adores a woman.

For the Prowler was, at that time, close to human in thought and in action. In these few years of his roving he had reverted somewhat to type. But, most of all, he had suffered spells of amnesia and did not recall past events, present surroundings, nor even whence he had come nor where he was bound. As a matter of fact, he was not bound anywhere at all. He was lost in the wastelands, searching for he knew not what. Homesick. Tired of his precarious subsistence. Rats and gophers and such survivors of the former wild life he did not relish as food. Not after all this time.

He would have occasional flashes of memory—of stage performances before the bright lights—of the operating room where they had first planned to give him human speech as well as the human attributes he already had been imbued with. But he could recall no names—he

could picture only faces and hands and bodies of the humans he had loved and who had worked with him. The girl—the actress. The doctor who had injected serums and vitamins into his veins and who had operated time and again on his brain. All these were lost to him as identities. But he yearned for human companionship. And he yearned to be freed from the mental tortures he was undergoing.

Padding through the jungle, his steely muscles rippling beneath the smooth, golden hide of him, he caught glimpses of a huge walled edifice that reminded him of what had once been home. It *was* home. The same towering steel walls, the same crystal enclosures atop the great height of it, the same water hazard along its edge. He would investigate. He would find a way to enter.

HE STOPPED only to slay and devour a weasel-like animal which had been rash enough to cross his path. Then he started for the city on softly padding paws and with his heart pounding at more than its usual rate with anticipation.

The Prowler was homesick. He wanted to know things, wanted to remember, wanted to rise higher in the scale of life as he once had been promised. Most of all, he wanted to see and consort with humans and to find that doctor who had promised him the sublime gift of real human speed in the next surgical experiment. He wanted, too, to be able to recall his own name. The girl—the actress—she did not so much matter. She had found her happiness and the Prowler was glad.

He came to the edge of the jungle; a matted expanse of prairie was before him. A crunching sound ahead stopped him in his tracks and he crouched on his stomach in the deep, sharp-edged grass. Before him was the enormous, twenty-mile-long expanse of the city, with the broad waters between. It *was* home.

The Prowler shivered a little with his delight. He would come back to his own; he would attain his desires. He would be human in all but form.

The crunching sound rose weirdly in his sensitive ears. Something was decidedly wrong at a short distance ahead of him. He slithered noiselessly forward to investigate.

And then he saw a thing that brought him flat to his stomach again, with ears drawn back and tail bristling to three times its normal size. A circular lid was rising there from the earth in the midst of the prairie grass. Strange creatures were emerging from its under side. These were not humans. These were nothing of any sort the Prowler had ever seen. They were monstrosities, and fearful to behold.

Fearful? The Prowler was afraid of nothing alive or dead. But these things were something beyond his comprehension or the knowledge of man. And they were most sinister in appearance. There were already hundreds of them above the surface. Queer, stunted caricatures of human beings, they were, and they carried packs on their hunched backs and odd weapons in their clawed hands. The Prowler's memory was bringing back now certain instruments he had seen in the hands of the robot police. Instinct, which he could not define, told him these creatures held no good in their intentions. He shivered again, involuntarily.

Still the misshapen creatures poured from beneath the lid of that great opening. Hundreds? There must be thousands. Automatically, the Prowler counted in his mind to ten, then twenty—as he had been taught for stage work—then decided it was useless. There were too many by far. And they were streaming across the marshes toward the river and the city of his dreams.

He would head them off and give the warning. The Prowler streaked through the knifelike grasses and plunged into

the marsh. Within a few feet of one of the ugly ones from below he had excellent opportunity of observing it closely. With a trembling control, he resisted the quick impulse to tear the thing to shreds. Its arms hung nearly to the soft underfooting; its body—unclad—was white as was its leering, thick-lipped face. Its eyes gleamed with maniacal fires, bulging from their sockets with the appearance of being covered with spectacle lenses such as those worn by the human friends the Prowler once had been so closely associated with. Sinister, repellent eyes—a repellent creation in all respects, the great cat decided.

Looking back over his shoulder, he saw great numbers of the same sort advancing on the city. But, with their short, bowed legs, loaded down as they were, he knew he could outdistance them easily.

And that he did, running as he had never run before. He swam the river and was at the great wall before they had well started.

BUT WHERE was an entrance? He remembered vaguely one he had gone through at another, happier time. It was not there. He skirted the cold steel for miles, it seemed. Darkness was falling in the great outside. The Prowler became panicky for an instant; then he saw it—a gleam of bluish light making a rectangle on the ground ahead. He leaped toward it and flung his sinuous body through the opening just as it was being closed.

Immediately he was pounced upon by a grinning, clanking robot guard. In its steel grip even his great strength was helpless. He raised his voice in protest, a most powerful and raucous wail—but there was no intelligent speech he could use. Rapidly he was carried across the brightly lighted ground level, struggling to no avail.

The almost human, erectly stalking robots were all around him. In every

direction he could look, the great machines of the city's power and water supply system were grinding or whirling. It was most confusing now, as the Prowler had been amidst these things not at all for so long a time. Besides, his memory had played tricks on him.

"Stop!" The great cat's heart almost stopped beating at sound of a human voice. And it was an authoritative one.

The robot dropped him from its crushing steel arms. The Prowler looked for the owner of the voice which had operated the control relays of the robot.

Here was a human. Friend of his kind! The Prowler fawned upon the man with the purple robe who stood there.

"Good Lord!" exclaimed the human. "One of the finest specimens I have seen in many a year. I'll take him to For-sythe." Then: "Back off!" he yelled to the massing robots. He patted the Prowler's head.

From then on it was a dream. Long, rolling-belt passages, a rise at an angle on another belt conveyor, then a breath-taking lift that took them up some eighty levels into a dim-lit corridor. The Prowler, for all his anxiety, began to feel at home, his one hundred and thirty pounds of lithe body relaxing for the first time since—well, since when he could not remember. But he had those queer beings on the outside to think of; he must warn his friends here.

Now they were in a white-walled room with most brilliant lighting. A familiar place! Yet it was not the operating room the Prowler had previously known. Had he made a mistake?

"Good Lord!" A white-coated man was breathing over him. "This is one of the best. Where do you suppose he came from—and who bred him?"

"Perhaps it's the Prowler."

"Nonsense. He vanished from New York years ago."

The Prowler was tired. He had submitted to examination without a murmur of protest. He now raised his head and nodded it vigorously.

"It is the Prowler. He's telling us. I'll be damned!"

Again the great cat nodded his shaggy head and his eyes were alight with appreciation and friendliness.

Both of the white-coated ones in that operating room gasped their astonishment. "He is almost human," one of them breathed. "Just as the reports from there stated. And he's trying to tell us something."

The other attendant was fondling the Prowler's ear. The great cat rumbled softly—he was with humankind at last! "Positively it's him!" the white-coated one exulted. "22X101—Miracle's number! We've a find. We must contact Rosso at once."

REAL MEMORY stirred within the Prowler's almost human brain. The number. . . . Miracle. . . . Rosso! All of these brought back the past with an intensity that shook his being to its foundation. The glands which had been transplanted within him to bring human attributes to his hybrid body and mind began to function, like the parotids of a man watching a neighboring diner eat some succulent food.

Miracle! That had been his stage name. He remembered now—and a miracle must be performed if he were to warn the city of the danger he was sure threatened. He reached out a huge soft paw to the man in white, caressing his wrist urgently but gently.

"This fellow is almost human," the man reiterated. "In fact, a darn sight more human than lots of humans I know."

The other white-coated one was at the visionphone. "I'm getting Rosso," he explained.

The Prowler's pawings at the first one became more urgent. He was insistent

on letting them know—somehow—of the impending raid on the city. He knew it was coming. And now he was uncertain regarding his whereabouts. He recalled that the steel barrier of this city was not the same as the one he had formerly known. There was not the cross-river sweep of his old home. He had had to swim here. Something was not in accordance with the former things.

But he was all right—that he knew. He was among human friends, the kind who understood. If only he had that gift of speech!

One of the white-coated ones, the one at the visionphone, was now talking excitedly. Miracle raised his head and squirmed out from the arms of the other, leaping to the floor and staring with wide blue eyes at the screen of the instrument that was glowing into life. A face appeared in that disk, a face Miracle knew well, a face he both loved and hated. He loved it for the work that had been done in his making over, hated it for separating him from the girl actress who had taken him and made him a stage success. What was her name? No matter now. Miracle had work to do. The face in the disk was the face of Rosso. He was conversing excitedly with the man in the white coat.

"Put him where I can see him," Rosso demanded.

"O. K.," was the reply. The man reached for the Prowler, but his aid was unnecessary. The great cat was on his hind paws already and stretched to the visionplate. Rosso's image darted back from the screen in alarm—or was it astonishment? Miracle was panting with his excitement. If only he could speak!

Rosso dissolved back into view. "Forsythe!" he almost shrieked. "It is Miracle! Ship him to me at once, will you?"

The Prowler again commandeered the vision space, shoving Forsythe aside. He shook his head vigorously in the negative, then dropped to all fours and sham-

bled away, sniffing each corner of the room in an endeavor to escape. These people did not understand, he thought. Then, after a minute, he recovered his dignity, realizing he was no mere animal, and sat expectantly in the center of the operating room.

Forsythe and Rosso were still talking, both gesticulating like cheap merchants.

"I know," Forsythe was saying on this end. "I know on account of the punchings in his ear. It's Miracle all right. But what right have you to tell me to send him to you? 'Finders keepers' is a saying several centuries old—and damned if I'll give him up. Besides, he's trying to tell us something important."

"I'll be over on the next stratoplane," the excitedly working face in the disk proclaimed. "Keep your shirt on and don't get sore. And if you want information from him, just mention Lolita. He'll *talk*, not with words, but he'll find a way to let you know what he wants to get across. Good-by!" The vision screen went blank.

SOMEHOW the Prowler warmed up inside. These people did care about him after all. And he must find a way of telling the ones here about the dwarfed creatures advancing on the city. He knew now he was not in his own home city. But this one was as good; there were sympathetic humans here. He would not have to chase gophers and rats and fight off packs of the wild dogs of the wastelands.

"Chicago!" Miracle had heard the word during the visionphone conversation. He was not in his native city. But what of that? He had found his kind, the kind he loved and with which he so much wanted to be identified. And this city was in danger; he was sure of that.

He rubbed his head against Forsythe's leg, rumbling softly in his throat. He tried to push the man toward the door

of the white-walled room.

"What's the matter, old fellow?" Forsythe asked. "What's on your mind? I know now that you have one almost equal to mine. Tell me."

The Prowler tried and tried hard. He sat up on his haunches, and was nearly as tall as the doctor when he did so. He patted soft paws on the doctor's shoulders peering into those thick spectacles with his own keen, blue eyes.

"Want to go out?" the doctor asked—and was immediately sorry. This was no ordinary pet, but an animal with intelligence and a very real understanding. With human emotions.

Miracle shook a negative with his great, shaggy yellow head. He was straining with his utmost to get over an idea. With one forepaw on Forsythe's shoulder he waved the other paw in the direction he thought was the outside from which he had come.

"Stanley," said Forsythe, "22X101 is trying to tell us something about where he just came from. And in these blue eyes of his I see a warning of danger. Let's put him under the psycho-reader."

The Prowler nodded vigorously his approval. He knew these clever machines of his beloved masters—men. They had done so much for him in so many ways he wanted to do all in his power for them and he did not object at all to the searchings of their multiple-lighted and multiple-controlled gadgets that bothered him only for the few moments they were being used. And he wanted to tell them things they needed to know.

"Lolita!" The name came back to the Prowler just as he was doing his best to warn Forsythe and the other. But he shook the idea of her from his head resolutely. Now was no time to think of the past. But thought of the young actress had given him an idea. They must have some of those number and alphabet charts around here, the kind with which he had used to work.

He could tell them with these more easily.

With Forsythe and the assistant watching him in wonderment, Miracle padded softly from room to room of their large laboratory. Finally he found what he wanted, a roller chart hanging on one of the steel walls. A, B, C—all the letters were there. The Prowler's pur became more than strident. It was compelling. He stood erect, with one great curved claw pointing to the letters.

"Holy cat!—I mean Miracle cat," Forsythe exclaimed. "He's trying to spell something out." Forsythe was a small, pudgy man with a square, black beard. He wore those spectacles with thick lenses which have a semicircle cut from the top so he could look over them by merely ducking his round bald head. He ducked and stared with his round gray eyes. Forsythe was round all over, but square for all of that.

"Raid on city from underground," Miracle spelled out by pointing from letter to letter of the chart. Then he turned to his new friends for the applause that would have greeted him from a stage. They stared.

"The *trogs*!" Forsythe almost yelled. "Willis—he's seen them in the wastelands. They'll raise the devil down below."

Again, and with all speed, the vision-phone was in operation. The rotund Forsythe was speaking swiftly into its disk, informing the robot police and the human authorities.

Willis, lean and dark and solemn, said excitedly: "Let's go down, doctor. Tie up the animal."

THE PROWLER backed away in alarm. Leave him behind? No chance. Once more he scratched at the alphabet chart, "Let me help."

"Tie him up, shall I?" Willis asked.

Forsythe's pale eyes twinkled over his glasses. "Lord, no! He'll be more help

than a dozen robots. Let's go."

The Prowler purred as no hybrid had ever purred before, rubbing against the little man's legs so strenuously as almost to upset him.

Another dizzying ride in a lift, ecstatic speedings of conveyor walks through endless passages. They were in the lowest level of the city, near one of the entrance portals. Miracle thrilled to the old memories of similar places. His golden fur now was fluffed out and his tail bristled with keen anticipation. There was to be a fight.

When Rosso had performed his gland transplantation operations and the hormone and vitamin feedings and shock injections on this superb animal, he had neglected nothing. Miracle was essentially human; he had all of the attributes, good and bad, of the race of man of which he was so fond. Emotionally, mentally, the Prowler was a man.

Robot police were massing near the entrance, their octagonal steel heads nodding, their writhing tentaclelike flexible steel arms holding weapons the like of which Miracle had never seen. How the queer and stunted creatures from outside would enter, the great cat did not know. This was more exciting than battling a dozen of the wild dogs of the wastelands.

Presently he saw a shower of bright sparks. The invaders were cutting through the steel wall with some sort of gas flame or heat ray. The robots stood ready. The blinding spark-shower progressed rapidly in a rectangle large enough to admit man or beast. A section of the steel plate crashed inward. And a blinding light from outside caused Miracle and his two guardians to turn their eyes.

It was a trick of the invaders. Even the robot police, with their coldly, scientifically constructed electric eyes, were blinded. The misshapen creatures of the underground streamed in.

Flashings from their strange silent

weapons brought down the steel and bronze and glass robots as fast as they rushed forward to stem the attack. Forsythe and Willis dodged behind a pillar. Other humans who had come to the scene did likewise.

"Lord!" squawked Willis. "If they get in the upper levels!"

The Prowler swung his head vigorously from side to side. These long-armed, pot-bellied imitations of humans would never get to the overhead reaches if he could help it. He noticed that the weapons they used spat forth an electrical discharge of some sort which seemed to render useless the mechanisms of the robots. To him it did not seem that the discharge would harm man or animal. He deliberately ran into one of the flares to prove this to himself.

Forsythe and Willis were shrieking behind him. Calling him back. But he paid no attention. Beyond a tingling sensation and a blinding light that bathed him and stood his fur on end, there was no effect. He was in the air then—a screeching, scratching fury. The invaders went down like ninepins.

A golden, wild-eyed beast leaping nine feet into the air and coming down with fangs bared and hooked claws outstretched into a five-pronged steel grappling hook with a span of more than six inches is enough to strike terror into the soul of the stoutest man. Into the souls of the tregs, those weird underground creatures, came more than terror. The queer flame weapons spat and spat—harmlessly against the arching and pouncing yellow-furred body. The misshapen, pasty-skinned tregs who had been pouring through the opening started a hasty retreat. Robot police were recovering now, and their hand weapons shot forth death to the tregs in the form of air-propelled capsules of prussic acid.

Red-clad police—humans—were now streaming down the corridors and entering the fray. The battling surged out

from the city and into the black night of the wastelands.

Forsythe flung his round self upon the Prowler, encircled the great throbbing body with insistent, though short, arms.

"Listen, old boy," he whispered into the drawn-back ear. "You've done enough. Let it go. The police will take care of it now."

MIRACLE shook his head. His whiskers were like needles, raking Forsythe's pink and puffy cheek. But the doctor was insistent. He wanted nothing to happen to 22X101. Rosso would slay him in cold blood, he knew.

Seeing that the retreat had become a rout, the Prowler subsided. Human affection and the pleadings of humans were too much for him. His snarls dissolved into gentle purrings. Forsythe was one he could trust and one to whom his existence and affection might mean something.

Things happened swiftly after that. There was great confusion in the lower levels, celebration in those higher up. Miracle, cuddling his huge form as closely as possible to Forsythe's round, hurrying legs, found himself in an arena of the top level which took away most of what had been left of his breath.

This was one of those closed-circle theaters of the sort in which he had acted and been so happy with Lolita. *Lolita!* Strange that her name had been lost to him for so long a period and that it now should be so poignant a memory. The rotunda loomed before him. He was led to the footlights. At last the Prowler was at home.

Home? No; several things were missing—important things. But this was good, very good. Miracle's vanity roused with the acclaim of the multitude beyond the footlights.

"Forsythe," Willis said awedly, "here's the governor of the city."

"So what?" Nothing awed the round

little scientist.

The governor was there. Miracle liked him, even though he was a pompous, red-faced spouting orator. He talked at length about the man-animal who had saved the city from serious depredation. It came into the Prowler's mind that he was the hero of the hour. That did not increase the vanity he had been imbued with years before. He stretched himself luxuriously, yawned widely and lay down with his forepaws outstretched toward the footlights. They were very bright; he had only a dim impression of the crowded seats and the standees beyond. Home? Sure he was home. Lolita? Where was she? If only . . .

"Ladies and gentlemen!" The governor's voice rose majestically. "We have here——"

"Shut up!" A voice came from the rear of the auditorium and at its sound the Prowler's ears laid flat to his massive head. Rosso!

Miracle's back arched stiffly. There was something about Rosso he resented. True, the scientist had created the Prowler as a hybrid, handsome and powerful beast with human instincts. True, the man had done much. But it had been only to perpetuate a line of intelligent creatures of the 22X line. Miracle was to be the progenitor of a new and valuable series of pets for the upper-level *nouveau riche*. Yes?

Rosso, sleek and debonair and suave, was now on the rotunda. The governor reddened and puffed his fat cheeks.

"Go away," said the scientist. "Go away. What are you talking about anyhow? I'll tell your audience some things. Besides, I am going to take my property with me."

"No," retorted the governor. "He's appeared——"

"Yes," snapped Rosso. "And here's an order from the governor of New York for the return to me of 22X101,

the animal sitting before you, and who is known as the Prowler or as Miracle."

The governor of Chicago was not a strong man. His position was one of political preference. He had been put where he was by those constituents who expected favors and did not get them. His position was very weak at the moment. He hemmed and hawed. His glasses were raised to his perspiring forehead with a flicking gesture. And his collar wilted on that instant.

Forsythe drew away, his heart sinking. This Rosso was a great man in his line, he knew. But he *couldn't* take the Prowler away from Chicago. The round little man had grown to love the yellow marvel.

A DISTURBANCE, a slight one to be sure, had arisen at the rear of the auditorium. A slight feminine figure was running like mad down the center aisle. Rosso shouted, "Keep her away from here!"

But no one on earth nor in any of the closed-in City States could have stopped this dynamic being. In fact none would have wanted to stop her. She was irresistible. She was Lolita! Behind her, in a slow, tolerant shamble, was Phil Strawn—her husband.

Miracle, weary and worried, raised his great head slowly. He saw her and knew her on the instant. *Lolita!* Good fortune such as this could not come to him. He had only recently come from the wastelands where he had roamed so long after losing her—where he had fought the wild dogs—where he had eaten of the rankest animal and vegetable life. But here was Lolita. In a moment she was on the rotunda; her soft warm arms encircled his shagginess just behind his now cocked ears. He sighed his content, purred so he could be heard across the footlights. The audience was in an uproar.

Rosso and the red-faced governor

were arguing. Forsythe was, in a very gentle voice, putting in his own oar. But Rosso had the papers that gave him full control over the miracle animal.

Lolita still had the great beast's head in her arms, cradled on her knees. Phil Strawn, approving, scratched behind Miracle's ears. The purring rose to a thunderous, but mellow sound. The house came down. Those of the huge audience had expected nothing like this.

"Listen." Rosso was firm in his speech with Forsythe a moment later. "You know something of the history of the 22X line. I don't want to take the Prowler away from Chicago. We'll watch and control him together. I'm not a bad egg. I'll split his value with you if necessary. But I do want to put across something that I've been at in earnest for two years. I'll operate on that cat's cords and make him *talk*. I know it. And, man, the Prowler knows as much as you and I. We'll *have* to reproduce his kind. And we'll both be as famous as we can want."

"Sure it's safe?" Forsythe was genuinely concerned. His round face worked worriedly.

"Safe? Of course it's safe. Listen." Rosso went into details.

In a few minutes, following docilely, Miracle was led once more to the rooms of the white walls and high padded tables. Lolita held to his side, gently clinging to one of his great ears. The Prowler was content. Even Phil Strawn, trailing the procession, was a friend and to be desired as such. The Prowler was with his friends once more. He loved them. He sniffed the gas with no protest.

How his yearnings came to him in unconsciousness! He dreamed of past stage successes—mostly of Lolita. The wheezing round of the gas apparatus died out. Suddenly he was awake, rolling over and staring up into a ring of faces.

The red-faced governor was there, Forsythe, Rosso—and Lolita, most important of all. Glazed eyes and numbed brain handicapped the Prowler. But his mind was working as it had never worked before.

He was happy for the first time in years. There were no more of the roamings in the wastelands. He drifted back into a partial, if not complete anaesthesia.

Lolita. Rosso. Phil Strawn, Lolita's mate. Humans mated as well as animals, whether synthetic animals or not. His own ancestry—*Felis leo*, *Cynaelurus jubata*, *Felis concolor*—rose in his dreams to confront him. He was not ashamed in his artificial reverie, but was proud. He was a new line—22X. Glad of it. His friends were the finest type of humans. He'd always protect them and be with them. They'd always protect and be with him. The Prowler was at peace.

HE RECOVERED full consciousness, only to hear some spouting from the governor.

"Shut up!" Rosso said authoritatively.

The red-faced one shut up.

Miracle made a chuckling noise in his throat, which seemed to be very sore. He swallowed hard and felt a little better. It was still sore, that throat, but there was something new about it. He

cleared it and was astonished at the sound that issued therefrom.

His vision was losing its dimness. All of the faces surrounding him were perfectly clear now.

"Miracle!" It was Lolita bending over him, snuggling close to his chest with her arms around him. "Miracle, speak to me."

Speak? That was what the great beast had wanted for so long.

"Speak to me," Lolita repeated. And she fondled Miracle's ears.

He tried to purr and couldn't. Something had gone wrong with the purring organization. That gave him momentary distress. Could he never make that soft rumbling sound again? Never mind—if he could get that real gift of human speech, he'd never care for the contented purring sound again.

His great blue eyes looked into Lolita's black ones with the old adoration. He saw tears there just over his sniffing nose. The gas they had given him had made him snifle. Or—was it human tears?

"Uh—uh—I—I——" Miracle was forming words with his lips and tongue and the newly formed vocal cords.

"Lo-li-ta!" he finally husked out; then succumbed into a deep sleep of peace and happiness, with the little trouper's hand holding fast to one of his great paws.

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THE TRAMP

by L. Ron Hubbard

The bitter hate of a blind beggar hag—incarnated in a rejuvenated woman, drives a beaten, mild little tramp to autocratic rule through a terrible power—The Evil Eye.



PART III

Conclusion

Doughface Jack faltered. For the first time, he glared at a man who did not fall.

Synopsis:**DOUGHFACE JACK TURNS COP KILLER****Two Dead and Three Dying Following Tramp's
Arrest in Central Park****STILL LOOSE IN CITY!**

New York, June 17.—The unexpected sequel to months of benefiting mankind was enacted tonight by Doughface Jack, renowned as the tramp with the mitogenetic eyes.

Following his arrest by Patrolman Spink in Central Park on the charge of killing two prize dogs and the patrolman's horse with a glare, Doughface Jack was questioned by detectives at Precinct Eight. The exact details of the slaughter at the station house were still lacking, since all those present were unconscious and critically ill, but it is supposed that the tramp grew excited and glared at his captors, bringing death to two and probable death to three more.

This turn of the tramp's intention was wholly without explanation. To this date no one, not even his mentors at the university, suspected that his mysterious eyes had any but healing powers.

Police throughout the city are searching for the tramp with orders to shoot on sight.

Quality of Eyes Unsuspected.

Some weeks ago, an accident brought fame to this unknown tramp when he fell from a boxcar, crushing his skull. Dr. Pellman, of Centerville, N. Y., operated immediately, sewing the two halves of the brain together and replacing the shattered skull with a silver bowl.

For some time, science has anxiously been trying to fathom the mystery of the strange healing power which resulted. With one glance the tramp was able to heal anything and even to completely rejuvenate the aged. Mitogenetic rays have been known to have great stimulating powers, and these rays were evidently present to a concentration hitherto

unknown in the eyes of Doughface Jack.

Until today, nothing but good resulted from this Cinderella tramp. But his eyes evidently possess killing power which he can control at will, as well as curing power.

**TRAMP AND CONSORT HEADED
FOR WASHINGTON!****Nation Panic-stricken!****Army Unable to Stop Doughface Jack.**

New York, June 18.—New York's days of terror were expected to end tonight with the departure of Doughface Jack, Tramp with the Evil Eye, for Washington, D. C.

Dr. Pellman, the Svengali who brought about the miracle of surgery which boomeranged, tonight said he was doing all in his power to stop the tramp.

Washington was alarmed at the possibility of Doughface Jack walking into the White House to take up the Nation's reins at the insistence of the strange woman, Rita, whom Doughface Jack is reported to have rejuvenated from a blind beggar hag into the beautiful woman of the New York stage she once was.

Army, navy and all police will have orders to shoot this pair on sight, but to date any and all attempts to kill the tramp who brought hundreds near the door of death and beyond it, have been met by the devastating glare which is inevitably followed by acute anemia.

The President minimized the danger, asking the Nation to be calm, saying that he was doing all in his power to put an end to the tramp.

Science Disclaims Tramp

Again, for the hundredth time, the scientists who brought Doughface Jack to New York and to fame disclaimed any responsibility for the havoc which has

followed the first arrest.

However, Dr. Pellman admits his own responsibility in the matter, at the same time stating, "It is not the fault of Doughface Jack. He was frightened into using a power he did not know he possessed. He knows he will be shot on sight, and so will continue to do anything he can to keep from being killed."

The police commissioner and all other officials insist, however, that such a menace must still be stopped at all costs.

Today's Death Toll

Martin Bevan, age 31, 345 Riverside Drive.

Thomas Corcoran, 53 . . .

X.

DR. PELLMAN paced nervously across the carpet of the police commissioner's office. A National Guard colonel, New York's police chief, the commissioner and two inspectors sat and watched him.

Each time Pellman would stop, all the men would sit up straight and open their ears expectantly. But always Pellman resumed his pacing more worried than before.

At last he stopped, tall with anger, before the colonel. "If you had only waited ten minutes," he said, shaking his finger under the colonel's nose, "we would now have all this straightened out!"

The colonel looked at his shiny boots and his face got cordovan. "I had my orders."

"Yes, you had your orders," said Pellman. "But damn it, man, you also had my wire." He shook his head hopelessly. "If you'd only thought."

"Soldiers don't think," said the colonel gruffly. "They obey orders."

Pellman turned to the police commissioner and his young face was strained.

"You're responsible for this too, remember," said Pellman. "If you hadn't let that broadcast order go out, Doughface Jack wouldn't be so much on the *qui vive*."

"The what?" blinked the commissioner, removing the long cigar from his orator's mouth.

"At every turn he expects to be nabbed," said Pellman. "He's scared to death. He's no killer. He's just a poor chap who was unlucky enough to be the object of a miracle. He probably didn't even know he could kill people just by looking at them until he met those thick-headed fools that grilled him."

"They paid for it," growled the commissioner.

"Sure, half of them are dead. But what they did is being paid for by others—good United States citizens. Don't forget that," stated Pellman.

"Sure," ventured an inspector, "they're payin' all right. About a third of these people he's looked at are dead by this time and the other two thirds are dying. I say he ought to go to the chair."

"You say it," said Pellman. "Then

why the devil don't you go out and get him?"

The inspector squirmed. "I—er——"

"I know," said Pellman, striding up and down the rug again. "I'm responsible for this. It's up to me. I put his brain together and therefore I'm the killer——"

"Aw, nuts!" said the commissioner. "You didn't have anything to do with it. How'd you know what was going to happen?"

Pellman paid no heed. He gave very little evidence of being what he was—a small-town doctor. He showed none of his decades of wisdom in that youthful face of his. But he had been room-companion to Death so often that people alive or dead could not impress him very much.

"Turn the militia on him!" growled Pellman to himself. "And now what will he do? He won't show his face in New York. He'll try to leave the city and hit for the country and then we've pushed him beyond any chance of getting him at all. There'll be no tracing him just as soon as he gets beyond the radius where he has been publicized. And the stupid papers—running his face on every front page of every edition. You'd think they'd be able to realize something once in a while. Of course, when a man calls him by that silly name, Doughface gets mad and it begins all over again. But he can walk down an avenue through an entire crowd and, unless he's molested, nobody hears a thing about it."

"PROFESSOR BEARDSLEY is still waiting," said a clerk through the inter-office phone.

"Let him wait!" barked Pellman savagely. "The stupid fool. He ought to——"

"Sssh," said the commissioner. "That phone worked both ways."

"What if it did? Gentlemen, it's not often I get mad, and I wouldn't be angry

now if it weren't for that cowardly fool out there. I don't dare meet him. I'd kill him. All he had to do was to tell Doughface that everything was all right and Doughface would have allowed himself to be confined in some country estate with perfect happiness."

"Huh," said the colonel. "I'm not worried about Doughface Jack's happiness. He's done for two of my men, remember."

"What if he has?" said Pellman. "Was it his fault?"

"His fault or not," said the commissioner, "he'll swing, I'm afraid. Murder, Dr. Pellman, is, after all, murder. And whether it is done with the eyes, a knife or a gun, it is still murder."

"And you'll use more force," said Pellman in disgust. "I——"

The phone jangled and the commissioner grabbed for it. The man at the other end was shouting so loudly that Pellman could hear it halfway across the room.

"I tella you, I'ma Grik. I'ma gooda Grik. But he come inna here, he knocka me down, he takea da clothes, he poota da rope ona me and thissa gal, she go widda heem. He feexa me right. He makka me so small I slide outa da rope."

"Did you hear where they were going?" demanded the commissioner.

"Sure. Why you think I call? They go to da train. They go to da Washington and taka da country. They ona way righta now. You gotta do asome-thing. Me gooda da Grik. I losa——"

The commissioner banged the phone on the hooks. "They're heading for the station. That'll be Pennsylvania. Come on!"

XI.

TRYING to appear indifferent, Doughface Jack and Rita entered the Pennsylvania Station. They wore street clothes at Rita's express command, and they carried luggage which had been growing heavier and heavier

block by block. Sun-tan powder helped mask Jack's identity. Redcaps assaulted them and wrested the bags away.

Doughface was upset. "How we gonna pay?" he whispered for the hundredth consecutive time.

"Never mind," said Rita with a mysterious smile.

He was not at ease in this expansive place. The ceiling was too high and the other walls too far away and the crowd which milled consisted of far too many. The uniformed redcaps and trainmen and guards gave him an uneasy chill. It was all right for Rita to be so cool about all this. She hadn't done anything, and she wouldn't be shot on sight or burned later.

He sidled up to the ticket window, the fashionable black hat well down over his face. "Gimme," he said nervously, "two tickets for Washington, D. C."

The clerk nodded and began to pull out green slips.

"Drawing room," whispered Rita.

"Huh? Oh—yeah—drawing room, mister."

The agent reached for his phone and checked for a reservation. There was one, and he began to prepare the slips, from time to time looking expectantly at Doughface for the money.

Doughface felt a wad of bills thrust into his hand. He blinked at them and then shoved them through the wicket. After the tickets and change had been given back to him, he pulled Rita aside.

"Whereja get it?"

"Now, Jack, don't be cross."

"Whereja get it?" he repeated roughly.

But she smiled at him and he melted on the instant. "A man with a diamond stick pin had it in his pocket," said Rita winningly. "He didn't need all that money anyway and, besides, I put the wallet back."

"The wallet—why— Say, what is——?"

"You don't think a beggar, and a blind

beggar at that, wouldn't learn to take advantage of New York crowds, do you?" challenged Rita.

Remembrance came as a shock to him. Here was a glamorous woman in expensive blue sports clothes—a woman who had so lately worn a sign which said "I Am Blind."

She didn't let him think about it. "Let's get aboard right away before something happens."

He followed her, and the redcaps followed him, and they hurried toward the gates.

Doughface Jack didn't recognize Pellman until the doctor stood squarely before him, seemingly from nowhere.

"Geez!" said Doughface, skidding to a halt. "It's—it's you, doc."

"Yes, Jack, it's me. Listen, fellow, don't you think this has gone far enough?"

Doughface looked downcast. "Yeah. Yeah, but how can I stop it? The cops is all chasin' me and the army come out tonight. Geez, doc, them guys is goin' to shoot me on sight. That's what the papers say. This is a helluva put-together. I can't do nothin' but run."

RITA CAME BACK, swiftly apprehensive, without clue to the identity of this tall youth who had confronted the tramp.

Pellman saw her and knew that she was the woman about whom the Greek had spoken. His eyes widened and he was visibly impressed by her beauty.

"Gosh, Jack, you're a picker."

"Look, Rita, this gent is Doc Pellman. He's the guy that put my conk together for me and done all this."

"Pleased to meet you," said Rita, chilly.

Pellman's hat was off. "Pleased to meet you, miss." He turned to the tramp. "Listen, Jack, I think I can get a compromise for you. They'll send you out into the country to some nice, quiet estate——"

"Jack," said Rita, sharply, "don't listen to him. It's a trap."

Doughface looked at her and felt the truth in what she said. "Look, doc, geez I'd like to help, but I've bumped guys off. Don't forget that, doc. I couldn't help it, but I did. You couldn't get these coppers to believe I didn't. Some of 'em seen me do it. If I turn myself in they'll burn me sure."

"Now you leave that to me," said Pellman, knowing that he was winning. "I'll talk to the commissioner——"

"No you won't!" said Rita, growing tall and arrogant with anger. "You leave Jack alone. He can't help what he does."

"No, of course not," said Pellman. "But he can keep from doing it again."

"If I was only sure——" puzzled Doughface.

Rita was thinking fast. She felt a debt of gratitude to the little man and—more important to her—she knew that her lot would be misery if she was cast adrift now, beauty or no beauty. She had no illusions about this world, had Rita.

She glanced around her, but nobody of importance or menace was in sight.

"Sure, Jack," Pellman was saying, "I'll see that you get a break. You just come with me——"

And Doughface Jack was weakening. "Y'got a promise from the cops?" he begged.

"Well," hesitated Pellman, "not exactly. But I can be pretty certain——"

She stopped listening to him, thinking rapidly. And then she did a most unexpected thing. She rushed forward, almost knocking Doughface down.

"Look out!" she screamed. "*They're going to shoot!*"

And Doughface Jack's excited state of mind caused him to guess at a hundred troopers behind every pillar. A guard rushed forward, attracted only by the scream, and Doughface multiplied him to a thousand.

With understanding, Rita dodged behind a near-by pillar almost before Doughface recovered. The tramp wanted to run—he started to run, and Pellman, so close to success, did a foolhardy thing. He touched Jack's coat.

Doughface whipped around. Pellman staggered and began to sink down. The guard was coming faster and, seeing a man begin to fall, jerked out his gun and fired a wild shot at Doughface, high over his head.

Doughface glared in that direction, crouched to sprint away. The guard collapsed and skidded to a halt.

The milling crowd all faced toward the tramp and the two fallen men, and for an instant Pennsylvania Station was hushed.

Another guard started forward from the press. He dropped. Behind him a patch of the crowd went down. The others stood for an instant and then an intelligent man in their midst knew and screamed, "*It's him! It's the man with the Evil Eye!*"

DOUGHFACE glared after them. Few reached the door. The great marble blocks of the floor were covered with baggage and limp humans.

From the doors above the floor level a torrent of drab uniforms began to spew, flowing down. Doughface was breathing hard as he watched them. He thought he was trapped.

Sudden fury shook him. Why couldn't the fools let him be? Why did they have to keep leaping at him and hounding him and——

The O. D. flow turned into an avalanche. Weapons and hats and men cascaded down the steps, intermixed until there was no distinguishing anything.

The supply at the top ceased. A mountain was stacked up on the marble. An olive-drab mountain marked here and there with bayonets.

Rita reached around the pillar and beckoned to Doughface. "Come on!"

They started for the train platform. But the noise above had already been heard and the news had spread. No switch-engine, not a porter there to tip his cap and present his palm. Not an engineer or brakeman or conductor remained in sight or at his post.

Doughface halted on the platform.

"Geez," he almost wept, "we can't drive no engines no more'n we can drive a car. We got to get out of here, but we can't——"

Rita was thinking fast again. She pulled at Doughface and raced up the steps again. Nothing had changed in the devastated waiting room. They picked their way, baggage in hand, across the sprawled and groaning people.

"Where ya goin'?" begged Doughface.

She did not answer but kept walking.

They reached the taxi lane but no drivers were there. Rita's flashing eye lighted upon a limousine which stood on the line, engine barely audible. She went swiftly toward it and looked into the front seat.

There, under the wheel, was a Negro chauffeur. His eyes rolled white as he saw her and he tried to cower back.

"Get up," said Rita commandingly. "Who owns this car?"

"Miz Morgan Depeister," chattered the Negro. "Who—who you?"

"I want to help you," said Rita. "Sit up. Everything is all right now."

The Negro sat up. He saw Doughface but he didn't understand—not yet.

"Black man," said Rita, "do you know who this is?"

"No'm," he replied, still too frightened to think.

"This," said Rita calmly, "is the man with the Evil Eye."

"Yassum. But I'se—*huh?*" he choked suddenly. His eyes rolled back into his head and he seemed about to keel over. Rita jerked him upright by the scruff of his neck.

"You aren't dead—yet," she said

coldly. "But you're going to be if you make one false move. Now listen. We are on our way to Washington, D. C., and you are going to drive us there."

"B-b-b-but Miz Morgan Depeister won'——"

"Did you hear me? This is the *man with the Evil Eye.*"

The Negro gulped. Sweat stood out on his forehead.

"Now," said Rita, "are you driving us to Washington or aren't you?"

"Yes," whispered the Negro limply.

"Jack," said Rita, "would you help a lady into her limousine?"

Doughface Jack grinned and took her arm. They settled back in the seat, pushing the luggage out of their way.

"James——"

"My name is Sam," quavered the Negro.

"James," said Rita, "the White House, please."

XII.

DR. PELLMAN was not immediately cared for, as he appeared a shade more alive than the others who were being carried from Pennsylvania Station. All available crews of ambulance men in the city were hard at work striving to take care of the injured, dead and dying who were strewn throughout the station.

Dr. Pellman braced himself with his hands and through a fog of pain watched the harassed workers rushing in and out with stretchers and listened to the rising and falling chorus of sirens which rocked New York.

He must have been there an hour, because an extra was already on the streets, being hawked in the station itself by now. Half of it was devoted to the chaos here and the other half to the hope that Doughface Jack and his mysterious "Witch Girl" were gone from New York for good. There was a rumor, the story said, that they had taken a limousine outside the station and had been seen again on the Jersey side of the

Holland Tunnel. Destination was not definitely known.

It had happened that a news reporter with a candid camera had risked death in the station—and received it—by getting a shot of the pair, and the edition promised that the next would carry that picture.

The picture had been published when they finally got to Dr. Pellman. The second extra was being cried on the walk and as though from a great distance he heard, "Witch Girl, Queen of Beauties, aiding madman with Evil Eye. Beauty and the beast join hands in devestation in Pennsylvania Station."

Pellman sank into a stupor through which the scream of the siren barely penetrated. He was not aware of being carried into a ward and laid, fully clothed because of the necessity for speed and the lack of helpers, on a white cot.

He did not know that this place would not long contain him and so he was very confused, two days later, to come more fully to life and discover himself in quite another place.

The room was a surgical ward, vaguely familiar. And it was not New York, because the only sound was a robin's call. Pellman tried to raise himself and a gentle hand pushed him back. Bewildered, he saw that it was Miss Finch.

"Gladys," he whispered, weakly.

"Shhhh," she cautioned. "He's around, Dr. Thorpe."

Somebody else moved in the room, and Pellman turned his head to his friend of long standing, Dr. Thorpe. The man was the greatest brain surgeon in the nation. His hands were those of an artist, sure and without a blemish to mar their smooth whiteness. His face was a very professional mask until he saw that Pellman had really come around. Then he relaxed a trifle.

"Well," said Thorpe, "I thought you were a goner, Jim Pellman."

"You would have been too," said Miss

Finch, "if Dr. Thorpe hadn't read your name in the list and sent his ambulance all the way into the city for you."

"What did you do?" said Pellman, weakly.

"Series of transfusions, that's all. What else could I do? You, along with all the rest, had the worst case of anemia I ever hope to see, Jim. You'll take weeks to get well, even now."

Pellman raised up a trifle. "Is there any further news?"

"News? Well, no. That fellow seems to be gone from New York. At least nobody has seen him."

"I know where he is," said Pellman bleakly.

"Then you had better tell the cops," replied Thorpe.

"The police," sniffed Pellman. "And what would they do? Run out the riot squad and lose it to a man. Turn out the army and lose that to a man. You saw what he did. Hundreds and hundreds of people— How many lived, doc?"

Thorpe looked grave. "Don't excite yourself, Jim."

BUT PELLMAN was not to be put off. He raised himself into a sitting posture, and when the room stopped madly spinning he focused his eyes on Thorpe. "You heard me?"

"All right," fidgeted the great surgeon, "you asked for it. It takes a victim about three weeks to die. You were lucky. You weren't as badly hit as the rest and you had some care. But the others—" He shrugged. "Ten days to two weeks."

"We've got to do something, Thorpe," said Pellman. "We've got to do something! Don't you realize that all this is on my head? Can't you see it? I'm the man that gave him that! I'm the man who killed those people!"

"Please," said Miss Finch.

"'Please' be damned," said Pellman. "Don't you know what is going to hap-

pen? That girl is using Doughface Jack. Yes, she's using him. And she's taking him higher than he would ever have dreamed of going. He was a menace before. He's sudden death now. Doughface Jack is heading for Washington, D. C."

Thorpe got it.

"You mean——" said Miss Finch.

"I mean he knows that he isn't safe unless he's at the top. The girl has told him that. The papers are right. She's a witch. I don't know where——" He frowned. "Do you suppose—— But, no!"

"What?" said Thorpe.

"Maybe she's one of his victims. Maybe she's an old woman and the same thing happened to her that happened to me. Maybe——" He sat up even straighter, and when Miss Finch strove to keep him from doing so he cast her aside with a motion he did not even know he made, so deep was his mental concentration. "Thorpe, I think I've got it!"

There was something in his tone which made Thorpe signal Miss Finch to stand back and not interfere. He poured out three fingers of whiskey into a beaker and handed it to Pellman, who downed it.

"Yes?" said Thorpe.

Pellman took a deep breath. "Thorpe, you're the greatest brain surgeon in the world."

"There's some question about that since you fixed up that tramp," smiled Thorpe.

"To hell with that. You can do it all the time and I can only do it some of the time. Listen—you've got to do something for me."

"Anything within reason," said Thorpe carefully. "You're taking this tramp thing too much to heart."

"Yeah," said Pellman. "Yeah," bitterly, "too much to heart. Only a few hundred have been affected so far. It's the nation tomorrow."

"The nation?"

"What do you think he went to Washington for? To play tiddley winks with the Washington Memorial? That woman is clever."

"AS FOR that woman, I can tell you something," said Thorpe. "When I was in medical school I saw her."

"What?"

"Yes, I saw her. She was an actress of some renown and an accident with hydrogen gas put out her eyes. I watched an operation which sought to restore that sight. That was thirty-eight years ago, and I was eighteen. But I'll still remember her and I saw her again in that picture in the paper, bad as it was."

"That proves it!" said Pellman. "That proves it, don't you see? He made her young. He gave her back her sight. And she's got brains. She's had thirty-eight years of misery, and she'll try to even up the score—and with Doughface Jack at her side she can do it! 'Witch Girl' is right! But look, Thorpe, that isn't the point either. According to what I heard about a Greek he knocked out, Doughface Jack can undo his own work."

"Yes, somebody has been saying that in the papers too," said Thorpe.

"But he won't undo his own work, because he thinks he'll be shot down on sight," said Pellman. "That leaves only one thing."

"What?" said Thorpe, unsuspecting.

"Thorpe, I know how I did that operation. Get me a stiff out of the morgue this afternoon and I'll perform it on that stiff while you watch. And then—— Well," he said quietly, "then you perform that operation on me."

Miss Finch screamed and flung herself at the operating table.

Thorpe yelled, "*No!* You damned fool! I might kill you with the smallest slip."

"That's my chance," said Pellman, an

ecstatic light in his eyes. "That's my chance, Thorpe. I could heal those hundreds before they die. I could track Doughface Jack and meet him face to face without any fear——"

"And maybe be burned to a crisp, both of you!" cried Thorpe.

"And that's my chance. You've got to let me take it. You've got to! I did this thing. It's up to me to undo it. Get that stiff, Thorpe; we're wasting time."

Thorpe looked at him steadily for a long while and then, abruptly, about-faced and walked quickly to the door, determination in his every move. Outside, Pellman heard him tell a nurse, "Miss Dawson, get a body from the morgue and have it sent in here."

XIII.

THEY WERE parked on East Executive and they could see through the shady oaks in the park, past the statue of Rochambeau to the White House.

"I don't wanna," protested Doughface in a monotone. "I don't see no reason for doin' it."

Rita squared back in exasperation. "Jack, sometimes you can be very trying. Sometimes I think you're—well—dumb!"

He sat up belligerently, but she smiled and patted his hand and he lost track of the conversation for the moment. He remembered shortly. "I still don't wanna. This put-together don't look right to me."

"Jack, do you want to spend the rest of your days in hiding?"

"Yeah, if nobody can find me."

"But that's impossible. If you got mad at somebody, the army would be on the move again. You'd never be safe. You don't know this world like I do. You weren't blind for all the years I was. And blind, I saw much. People are rotten things, Jack. Rotten! Once, everybody was my friend. Oh, yes they

were. Everybody that was anybody knew me. Flowers and cards and invitations. And no dinner was complete unless I was there. And then it happened. Then I couldn't see any more. I was awful to look at. And what did they do?"

Her lip curled with bitterness as she thought about it. Her voice was like flowing acid.

"They forgot me. They left me to shift for myself. The men that I had befriended left me alone because I wasn't pretty any more. That was all they wanted from me—beauty. And when it went, that was the end. You don't know what it means to be kicked into the gutter when the roughest fabric you had known was silk. You don't know what it means to try to fill a stomach used to scented wines with mouldy bread crusts. Charity. I didn't want charity. I didn't want anything but the friendship which they had sworn they had for me. And everybody is like that, Jack. You know they are.

"Take this pal of yours, the doctor that made you that way. Did he stand up for you?"

"Well"—Jack hesitated—"no."

"Sure he didn't. He laid a trap and stopped you. He was trying to get you into the hands of the police. He was trying to stop you so that a man with a gun could shoot you before you saw him. You know that that's true. Pellman gave you the double-cross. Those soldiers were waiting all the time. You couldn't trust Pellman, and Pellman, from what you say, was the best friend you ever had. All right, add that up and what do you get?"

"I guess you're right," faltered Jack.

"You guess I'm right. You know I'm right. And I'll tell you something else. When I was at the top I had friends. Do you know who they were, those fools who threw me aside and forgot me when I had nobody?"

"No," said Doughface.

"No. No, nobody knows but me.

The rest have all forgotten. They were kids, then, mewling around my dressing room door. They were down from Harvard and Yale and Princeton. And do you know where they are now?"

"No," said Doughface.

"On the bench of the Supreme Court of the United States. In the Senate and House. On the cabinet. Oh, yes, they are. Lots of them. And those that aren't, own big factories and steamship lines. They're the pick of the country."

"Yeah, but——"

"And as long as they are up so high," said Rita casually, regarding the polish on her beautiful nails, "they can be used, and, being used, can suffer. You and I, Jack, are going to show them a thing or two."

"But, geez," said Doughface, "I ain't got no idea about a gov'ment. I dunno nothin' about it."

"You don't have to know. You've got me. You don't even need to expose

yourself. You've got a woman Friday."

"A huh?"

"You've got somebody to front for you and that somebody is me. Now come on, get out of the car."

SHE PUSHED him, and he stumbled to the parking. The Negro looked anxiously for orders.

"Move one foot from here or say one word to anybody," said Rita, "and this man will track you to the ends of the Earth to kill you."

"No'm," chattered the Negro. "I ain't gwine do nothin'. Hones'. I'se just a pore——"

"Come on, Jack," said Rita, taking his arm.

He was very unwilling. He felt, somehow, that he was in the midst of a torrential current that was carrying him on and on despite any feeble effort he could make to breast it and gain shore. He



The President struggled to rise, then slumped back as the tramp's eyes lashed out at him.

was panicky when he thought that maybe these guys would shoot before he could do anything.

Rita read that thought.

"Now listen, Jack, this is going to be easy. All you have to do is look and they'll drop. They're after your neck. These men are the government. They're the ones responsible for all the police and soldiers in the country. If it weren't for these men you'll meet in a moment, you wouldn't be worrying the way you are. And they'd shoot you on sight, any of them. Don't give them a chance. I'll be right behind you, so don't look back."

"Y'think I ought to do this? Y'think I can do it?"

"Do I think you can?" laughed Rita. "Why, I should say so. Nobody had better stand up to you, Jack. You're through being kicked around and starved and hunted. You're through with haystacks and boxcars forever. You're going to be the greatest man in the world, and the only thing that's stopping you is a few men in the White House."

"Maybe I don't want to be the greatest man—"

"You want me, don't you?" challenged Rita.

"Gosh," said Jack.

"Then you want to be the greatest man in the world. Remember that you are about to meet the men who have been hounding you. If they get away, you'll be killed. You must not let them get away."

Jack walked stiff-legged to keep his knees from buckling. But he was a little angry, too, to think that a few guys in a place like this could cause him all the trouble that he had been caused.

The gates were open as always and no one was on guard. The public was perfectly free to walk around this curving drive which led to the doors.

All was very peaceful. Cars hummed



*No man could stand before his glare;
no guards could stop his progress
through the White House!*

lazily along Pennsylvania Avenue behind them and a bored diplomat was getting out of his car in front.

Doughface was apprehensive about being recognized. His picture had been circulated in Washington, because this very thing might happen. But he was fairly safe on that score. Rita had applied sun-tan powder, thus obliterating his most recognizable characteristic—his pasty-white complexion.

Two Secret Service men were lounging in the doorway of the White House, on duty for this very purpose. They were young men, quick of eye and quicker on the draw.

Rita followed at a slow and casual pace. Doughface felt his knees knocking together.

The Secret Service men stood up straighter, as they did whenever they spotted a casual stroller approaching the driveway cover. Doughface walked along, trying to keep his teeth from chattering.

THE MEN saw Rita, but still they were not certain. They glanced at each other as the visitors came even closer, and then the shorter of the two reached casually into his coat pocket for the photographs.

"Jack!" said Rita tensely, "he's going to draw and shoot!"

Doughface thought so too. He started with the shock—and the thing was done.

The two Secret Service men stumbled back against the doorway. They sagged slowly. The shorter one was attempting feebly to draw and shout, but the lightning had stunned him.

Doughface wanted to run, but Rita was trodding on his heels. He went swiftly up the steps and across the fallen men.

The reception room had many people in it. And they had seen the Secret Service men fall and were coming forward wondering.

A guard saw Doughface and the collapse of the Secret Service men gave him the tip-off. He grabbed for his gun just as Doughface got inside.

"Back!" yelled the guard to the others. "It's him!"

In a wave of panic, men dived for exits. But the offered weapon had done the thing once more. The guard collapsed, still fighting for a chance to

aim the weapon. And then it was too late.

Three other guards went down like dominoes. The men and women in the room had taken too long to get out. They wouldn't now. They were lying on the floor in grotesquely twisted attitudes.

It was all silent; it was almost calm. It was horrible.

Doughface wanted to run again. But Rita held him by the shoulders. A door opened in reply to the shout and two more Secret Service men rushed out to stop as though running against an invisible wall, and drop.

Doughface heard a sound to his right and whipped about. A guard was standing there with leveled gun. He fired a wild shot and then he went down.

Doughface dived for the inner chamber.

A secretary came halfway up from his desk and then fell face down across it. Three visitors leaped up and fell forward in limp heaps.

Another secretary came out of an inner office, papers in hand. He dropped and the sheets settled slowly over him.

"In there!" said Rita, shoving Doughface ahead toward a big door.

Doughface went forward.

The President had heard the first shout, the shot, and then had seen his secretary drop. He knew what was coming. But he was no coward. He stood up, knuckles resting on his desk top, his face calm in its halo of gray hair.

Doughface came through the door and stopped.

"So you," said the President, "are the tramp. Has it occurred to you that you will undoubtedly hang for these murders?"

The statement could not have been more ill-chosen. Doughface could not help his own reaction to that statement.

The President of the United States sagged into his chair, his face as gray as his hair. He held on hard to the arms

of his chair, fighting to keep erect, fighting with more will power than he had ever known he had possessed.

"Don't kill him," said Rita swiftly to Doughface.

Doughface pulled Rita inside and then banged the doors shut. He turned again. He began to realize fully the awful thing he had done, and he could see no salvation for him now.

"Mr. President," said Rita, "you are not dead and you will not die if you do as I say."

Doughface thrust her aside, realizing fully what a spot he was in. "Geez, I dunno what I'm doin'! If I kill you, they'll hang me sure!"

"Leave him alone," ordered Rita.

Doughface wouldn't listen to her. "I ain't done nothin' until now that I thought up myself. Geez, Mr. President, you ain't done nothin' to me. If you'll get me out of this jam——"

"Shut up," said Rita.

But the trick was done. The President had had enough to bring him back to himself again.

"Young woman," he began.

"Listen to me," Rita interrupted. "You're going to stay with us for safe keeping. They won't bomb this place as long as they know you're alive. They won't try to kill me, because they will know that Jack is somewhere near at hand. Now he's going to bring your staff back to life and I'm going to start giving the orders around here."

"Why?" said the President. "What could you possibly do——"

"What could I do?" said Rita. "I can do plenty. There are a few men in high places, Mr. President, who are going to find out just *what* I can do. If you want to live, shut up. A month ago Doughface Jack was nothing but a tramp. Today he's a bigger and more powerful national figure than you. Try and laugh that one off, Mr. President. Jack, get to work on those secretaries."

XIV.

FOR five days Dr. Thorpe did very little besides sit at his desk and watch the reports stack on Doughface Jack. It was no longer necessary to clip the news stories, but only to preserve the papers. A major depression was beginning on the wings of panic. No man knew what would happen within the next hour.

Rockford Sims of steel fame had died, suddenly and abruptly. Two cabinet members were being buried on this day, a senator on that.

And across the entire land there stalked the shadow of a beautiful woman, the Witch Girl, which name was no longer limited to the tabloids.

At first it had seemed impossible that anything drastic could happen other than a presidential assassination. No one had dreamed that the reins of government would actually be picked up, and no man had been able to guess that there would be men more than willing to work for such a leader. Yet there were such men. They had been in minor offices where they thought the work had been hard, or the pay too small, or the bosses officious. And now they were only too glad to take allegiance and settle their own scores.

Democracy, in five mad days, had crumbled to a scrap of paper, and become what it had been in the beginning, merely an abstract idea. And now it was done. This was not monarchy nor was it dictatorship. It was worse. The whims of a woman were deciding the policies of state and the personal animosity of a woman was passing the death sentence on every person who had ever offended her—and the offenders of a blind beggar are many.

Minority isms had fallen swiftly into line. Chaos had begun. A machine had arisen like a beast and would shortly be so powerful that nothing would ever be able to prevail against it. To the whims

of the woman would be added the hates of lesser officers. Prejudice and jealousy and opinionation would rule the day. A system was rising, and shortly that system would be too huge to be stopped.

The market had already crashed. Banks were closing every hour. Wild, insane rumors fled like tattered ghosts up and down the land. Men blew out their brains, bringing death before the death would come of itself.

Thorpe watched his clock. He had watched that clock for five days, and how slowly the second hand ran, how much more slowly moved the minute hand and the hour hand not at all.

For five days he had viewed and reviewed that operation, checking every step he had made, searching, searching, searching to be certain that there had been nothing forgotten, nothing left undone.

HIS BUZZER rang and a nurse's voice said, "Dr. Thorpe. Dr. Pellman has just regained consciousness. He is asking for you."

Thorpe leaped up and, with shaggy locks streaming, raced down the corridor to the private room. He entered silently and stood, not daring to believe his eyes.

Pellman was sitting up with pillows at his back. He was smiling and, if it had not been for the bandages around his head, no one would have believed him ill.

"Come in," said Pellman.

"Jim!" said Thorpe hoarsely. "Then I didn't kill you after all."

"Kill me? I feel fine. How long have I been out?"

"Five days," said Thorpe, shakily. He approached Pellman's side. "But I don't understand. If you just became conscious, how is it that——?"

"Same thing happened to Doughface," said Pellman cheerfully. "He couldn't heal himself all the way, but he could come out of almost anything in jig time.

What's been happening?"

"Jim, it's awful."

"You mean I was right? He went to Washington after all?"

"Yes," said Thorpe.

"The fools," growled Pellman. "I knew the police and army would make that happen. They had to be bigger than either police or army to keep alive. And what have they done?"

"It isn't so much what *they've* done," said Thorpe, "but there are others with plenty of petty scores to settle in blood. Plenty of others. And every agitator, every malcontent in the country, is swinging into line for them. It's the woman that's doing it. She had some grudges of her own, and now all these others—— Jim, I give the United States about two more days and then we'll make Russia look like a Paradise. Pogroms, secret firing squads, espionage everywhere——"

"Then it's a case of stopping Doughface. What happened to him?"

"It isn't Doughface Jack. He's just the weapon of that woman. He wouldn't have the brains to do this," stated Thorpe. "Even I know that."

"Have they tried to shoot the girl?"

Thorpe nodded. "They posted a sniper on the top of the Department of the Interior and he used a telescopic sight. He hit her too. In the back. But the next morning she was out again. Doughface fixed her. But the sniper—— He vanished. It wasn't Doughface that got him. They have the nucleus of an O.Gaypayoo already. Men are going to them begging to be accepted. She ordered the release of all prisoners from the jails there, and is going to release all other prisoners in the nation and, of course, they'll swing in. We're in for a reign of terror, Jim."

"I see," said Pellman slowly. "Do you think it can still be stopped?"

"As long as Doughface can kill men on sight he can't be caught. The President is held hostage and so the White

House can't be bombarded. He got a message out requesting it anyway, but the army still won't act—what's left of the army."

"What's left of it?"

"CERTAINLY. The ranking officers are dead. They tried to hold conference and reach a settlement and the girl had them shot. There's nothing that can be done. Over twenty men have sacrificed their lives attempting to kill Doughface, and his power seems to grow stronger. The President wouldn't believe there was any danger of this and now see what has happened!"

"Maybe it's not too late," said Pellman.

"It will be shortly," said Thorpe bitterly. "Business has stopped. Small officials have rocketed themselves to the top, and everything in sight is being confiscated. Criminals will soon occupy the top positions in everything and, with their thirst for revenge against society and law——"

"How about the people that Doughface nailed before he left New York?" asked Pellman.

"Still about four hundred and fifty-odd alive."

Pellman threw the covers back.

"You can't get up!" said Thorpe, aghast. "After an operation like that you can't risk it! Why, I took the top of your skull off!"

"Doughface Jack's injury was complicated with trauma. Mine isn't. I'm all right, Thorpe. Get my clothes. Call all the hospitals and tell them to have those victims ready. We've got to make this fast."

"But wait," said Thorpe. "You're running a long chance! You may have a relapse!"

"Never mind that," said Pellman. "Get my clothes."

Miss Finch came in hurriedly, just having gotten the news. She saw Pellman starting to get out of bed.

"Jim!" she cried in alarm. "What are you doing?"

"I'm getting up," stated Pellman. "Don't stand there gaping at me. Get my clothes!"

"But," cried Thorpe, "we don't even know if it works with you."

"You don't, huh?" said Pellman with a sudden grin. "Go look in the mirror."

Thorpe glanced distractedly toward the one behind him and then started to say something. Suddenly he registered. He whirled around and bent over and studied his face.

"Why, why——" He stammered, "I—I look like—I look like a kid!"

"Get my clothes," said Pellman decisively.

XV.

DOUGHFACE JACK was sitting at the table in the White House dining room. Breakfast dishes were strewn before him, blanketed with the newspaper he was reading. Mechanically, he dunked a doughnut in his coffee and just as expertly kept it from dribbling on his chin when he ate it.

Characteristically, he was reading the last pages first and at long last he turned and scanned the front page.

The scareheads hit him hard.

PELLMAN RECOVERS FROM OPERATION

Man Whose Surgery Responsible For Tramp Well

"Huh," said Doughface. "He got over it, the rat." He looked up and saw Rita standing by the window. "Hey, whatcha know about this? Doc Pellman didn't bump off after all."

She came to the back of his chair. "What else does it say, Jack?"

He read laboriously, "'Operated on by Dr. Thorpe, the famous brain sur-

geon, in an attempt to approximate the mitogenetic radiation used by Doughface Jack, Dr. Pellman was said to be doing nicely this afternoon——”

Rita's face was pale, and her hand was like a vise on Jack's shoulder, "That means—that means that he'll try to get you!"

"Naw," said Doughface. "What could he do to me, huh? He's tryin' to heal up all them guys that I knocked down, that's all."

"What would happen if you met him?" said Rita.

"After the trick he tried to pull last time," threatened Jack, "I'm not taking any chances. There was a time I thought he was a right guy, but when he tried to front for all them soldiers—— Well, let me get a look at him and you'll see what'll happen."

"Maybe it won't do any good," said Rita.

"First time I ever saw *you* scared," said Doughface.

"I am—a little. Everything was going so well. I don't think we had better depend upon that trick of yours, Jack." She pulled the bell cord and went toward the door.

In a moment a thick-faced fellow came in. He bore the stamp of his past, but even that harsh mark did not do that past justice. He had been everything from a dummy-chucker to a safe-cracker.

"Harry," said Rita, "there's a doctor in New York who's going to be able to do the same thing that Jack does."

"Huh?" said the ex-con.

"That's right," said Rita. "He's a tall fellow with wavy brown hair. You'll know him because he'll have the same expression around his eyes that Jack has."

Harry's stubby fingers touched at his left breast and felt the hard steel under his coat. "I get it."

"He's liable to come down here," said Rita. "Tell the boys to keep a close watch and to shoot *anybody* answering

that description who tries to approach the White House."

"Sure," said Harry. "I won't take no chances, sister."

He went out.

"Geez," said Doughface, "do you think that doc would come down here?"

"There's no telling," said Rita. "There's a chance that he's the only man in the world that you wouldn't be able to down. I wish I knew about such things."

"Aw, I'll down him, the dirty rat," said Doughface. "Layin' a trap for me that way. He'll mess around once too often. I'm goin' out and get Two-Finger to sit around and keep a special guard."

"You keep out of sight," said Rita. "You know what happened yesterday."

"Aw, they missed, didn't they? I'm sick of sittin' here twiddlin' my thumbs. I don't have nothin' to say or——"

She smiled sweetly upon him. "Don't get restless, Jack. As long as you're safe, nobody dares touch me. And I've got this country in the palm of my hand. I ordered the release of all prisoners at Leavenworth this morning. Ricky the Mick is in for a stretch down there. He's worth having out."

"Will they release 'em?" said Jack.

"They better had. There's one thing they know we can do. We've still got plenty of important men in this city—men nobody wants to see killed."

"Y'think it's right to do that?" said Doughface.

"Anything is right that you can get away with," stated Rita.

"Yeah," said Doughface doubtfully. He looked back at the paper. "Wonder if the doc is really goin' to come down here. Y'know, Rita, there's a chance he didn't trap me in New York."

"Nonsense," said Rita. "I've told you half a hundred times what he tried to do."

"Yeah, maybe you're right," said Doughface.

XVI.

THORPE scanned the central waiting room at Union Station. He was extremely nervous, and he had, from the first, opposed Pellman's trip to Washington, D. C. And now that they were here, Thorpe expected death momentarily.

They were leaving the waiting room, walking toward the cab line when a flurry of swagger coat attracted their attention. Pellman whirled to have Miss Finch fling herself into his arms.

"Jim, I won't let you do this!" she wailed. "When you vanished this morning I knew where you had gone and I flew ahead. You can't do this, Jim. It's suicide! He's got gangsters and everything! And you're all alone and you haven't even got a gun!"

"I don't need a gun," said Pellman, gently pushing her away. "This is a deal between a girl named Rita and me, and because of that I'll have to face Doughface. I don't know what may happen, but I do know that this is my fault. Nothing can stop me."

A cabbie was holding open the taxi door and Pellman started to enter.

Just in time, Thorpe saw the glint of sun on metal. He shouted "Look out!" and knocked Pellman back.

The gunman fired too late. Glass showered from the window. On the walk, Pellman rolled over swiftly. The gunman was chopping down with a second shot. The gun blazed and the cab driver was hammered back against his fender. And then the gunman sagged, bending forward to fall without making an effort to break the drop.

"Get inside," snapped Pellman. "He must have people all over this town by now."

"That damned girl's emptied the jails," said Thorpe.

Pellman turned to the driver and stared for a few seconds. "Get in and drive, fellow."

The cabbie was holding his side and his face was twisted with pain. "I—I can't. I'm hit!"

"Sure, I know," said Pellman. "Get in and drive."

The cabbie pulled his hand away and looked at it. Yes, there was blood on it, but—but there wasn't anything more dangerous than a hole in his coat. There was no wound.

"What the hell?" he gaped.

"Drive," said Pellman.

THEY ENTERED the cab and the driver began to weave through the traffic on the ramp.

"There might have been another one," said Thorpe. "They might know about this by now up at the White House."

Pellman looked steadily ahead.

"I'm going all the way with you," said Miss Finch.

"No you're not," contradicted Pellman. "As soon as we draw alongside another cab, I'm taking it. You can follow at a distance if you like."

"How," said Thorpe, "do you know Doughface won't be able to kill you?"

"I don't know that," said Pellman quietly.

Miss Finch was frightened. "Is it worth the risk?"

"Is the United States worth the life of one lousy doctor?" countered Pellman. "This is my show. Nobody ordered me to operate on that tramp. I operated and things happened. Nobody has ordered me to do this, but I'm doing it. It's the very least I can do."

They went around the circle at Massachusetts Avenue. The lights stopped them, and Pellman, seeing an empty cab behind them, crawled out.

Miss Finch tried to grab his sleeve, but he avoided her.

"Jim," she cried.

He didn't look back. He opened the door of the other cab and got in.

"Where to?" said the broken-nosed driver.

"The White House," stated Pellman. "Huh? Hell, buddy, you couldn't get me near that place for a million bucks. A thousand anyhow. What's the idea? Want to get yourself killed?"

"Maybe," said the doctor. "My name is Pellman."

"Pellman? *Dr. Pellman?*" said the cabbie with awe. "Gosh. Don't pull nothin' on me. Don't look at me. I'll drive you any place you say. Honest I will, only don't look!"

"All right," said Pellman, "I won't. But drive me around to the rear. I'll walk up out of the park to it."

The cabbie drove with a recklessness born of a desire to get rid of his passenger as soon as possible. He careened past the Treasury and around the curve at the back of the White House. He braked to a stop beside some masking shrubs and Pellman got out, reaching into his pocket for the fare. But the cabbie didn't wait. He was gone with roaring motor and out of sight in the blink of an eye.

And then began the work of edging up on the place, getting as close as possible before he was seen. And so swift were his rushes from cover to cover that he came within a hundred feet of the rear door before he saw a curtain twitch.

Window runners shrieked and a head appeared. The snout of a Tommy gun was thrust over the sill.

Pellman dropped just as the gun started chattering. Twigs and leaves sprayed upward from the tree above him. He raised himself an inch and stared.

Suddenly the gun began to shoot toward the zenith. And it kept on shooting as it arced. The last few shots sounded within the room.

PELLMAN leaped and dashed for the door. A revolver banged to his right and a whistling bullet passed over his head. He flung himself into the cover of the doorway, glanced back and then

threw the full weight of his shoulder against it. It crashed inward.

A revolver crashed almost in his face and a flash of pain raced up his arm. He did not see who it was as it was dark within this basement room. He did not have to see. When he started up the stairs he trod on an outflung hand which did not jerk back.

He reached another door at the top and slammed his weight against it. But he knew better than to go through. He jerked back and lead splintered the wood over his head.

He did not show himself. He, a man of science, knew a few things Doughface Jack did not. Pellman stared through the partition, and though he saw nothing, there was a sudden silence in the White House kitchen.

He sprang into the room. Two men were heaped up before the stove. He heard a footfall in the hallway. He did not open that door immediately.

He waited and then he opened it.

A gentleman with a gun still clutched in his hand was face down on the floor.

Going at a run, Pellman raced toward the dining room. A gun crashed behind him and he flung himself forward like a slugger going for first base, glancing behind him as he slid. There was a thump, and he did not need to inspect the source for the reason.

Directly before him towered Harry. The man gripped an automatic, and his eyes were wild with determination to kill. But Pellman was still sliding when Harry got it. Harry stumbled back, arm going limp, a single shot pumped into the floor.

The doctor was up on the instant. He glanced about him. Somewhere at hand he would find Doughface and Rita. He had to find them before they could escape, or before a lucky shot killed him.

He threw his weight against a double door. It gave with a splintering crash and Pellman braced himself from

following through. Rita was just coming to her feet on the other side of a desk.

"Sit down," said Pellman. "I have no wish to kill you."

"Jack!" she screamed.

She grabbed for a revolver which lay before her and Pellman also snatched at it.

The recognition of the danger in her had been enough. Rita's stretching fingers suddenly tightened up into an agonized claw. Her face froze into white marble. She strove to stay erect but she could not.

She was dying and she knew it.

"Jack," she whispered.

And then, as though she were a puppet whose strings had suddenly been dropped, she sank into her chair.

A door was flung open and Pellman whirled to see Doughface. The tramp paused on the threshold. He wore a disheveled wig and his face was grimy. He had looked for Pellman to come the other way and now—

"Rita!" he cried, rushing forward to grab at her shoulders. But even that touch told him that she was dead. He faced about, raging.

"Damn you!" screamed Doughface Jack. "You've killed her!"

"Jack," said Pellman, "you're coming with me."

"The hell I am!"

Jack drew himself up. There was a curl to his lips and hardness in his eyes. "You been askin' for this, doc. I thought you were a good guy, but I know now that you're just as rotten as the rest of 'em. I only wanted one thing in this world, and that was this dame and now she's——"

HE JUTTED out his jaw.

Pellman faced him squarely.

A grandfather clock out in the hall was *tic-tocking* with steady monotony.

Pellman felt as though he were being electrocuted, but his face was without expression as he stood his ground.

The clock kept clipping the seconds and Doughface did not move. One of them had to break. One of them had to let down. One of them——

And it was Doughface. He began to reel. He seized hold of the desk top to support himself. And then it came faster. His resistance vanished. He felt lightning frying in his head and awful nausea sweeping through his body.

He dropped, clawing out even as he fell to snatch a final hold. He knocked down Rita's arm and when he hit the floor, her hand was on his shoulder, touching him ever so lightly.

Pellman sank down into a chair and held his head in his hands.

THE END.



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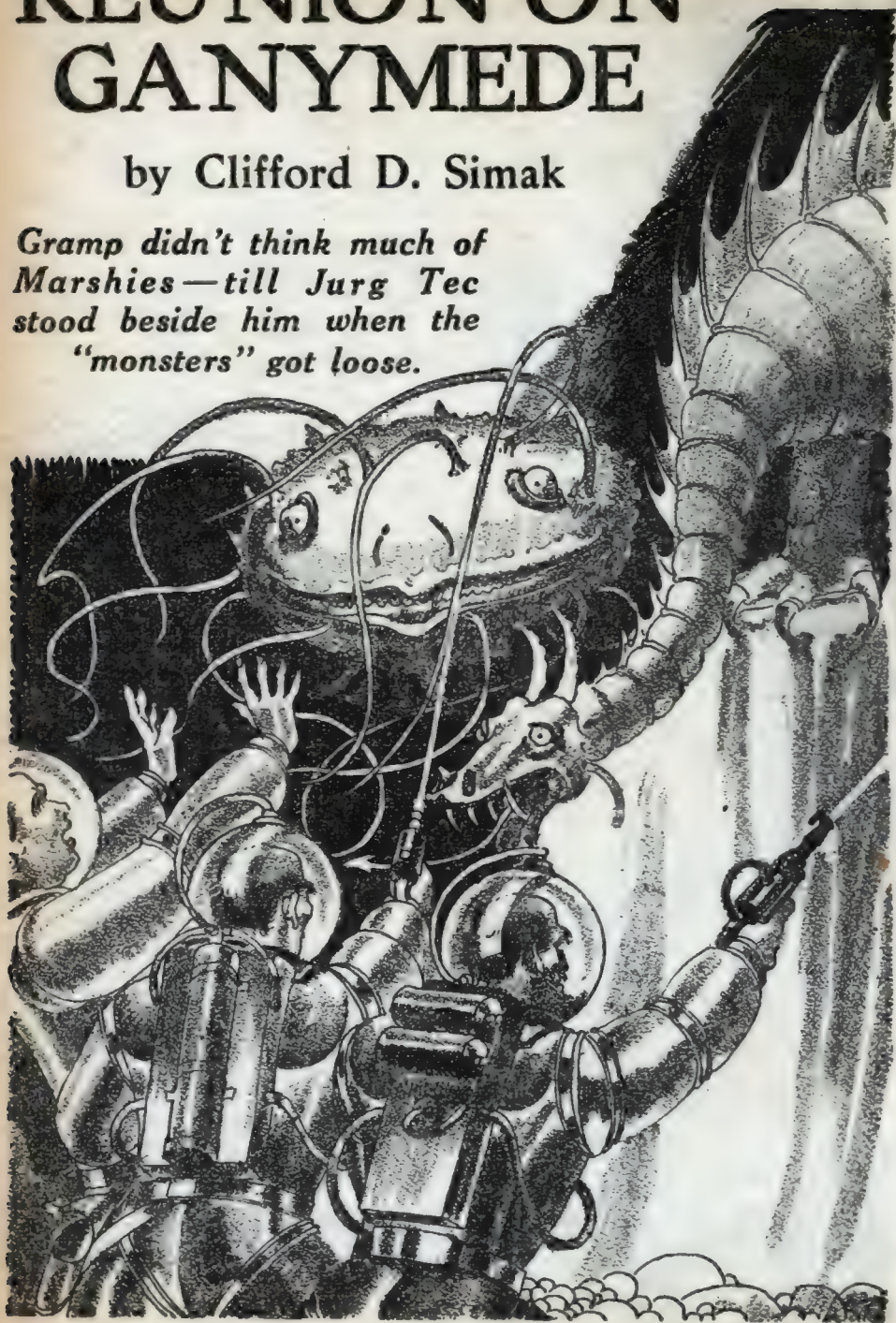
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REUNION ON GANYMEDE

by Clifford D. Simak

Gramp didn't think much of Marshies—till Jurg Tec stood beside him when the "monsters" got loose.





Gramp gasped. Some of those things he knew—and they couldn't live in this atmosphere! Things from Venus—Pluto—and things that must have come straight from a madman's delirium!

BY CRACKY," shouted Gramp Parker, "you're tryin' to mess up all my plans. You're tryin' to keep me from goin' to this reunion."

"You know that isn't true, pa," protested his daughter, Celia. "But I declare, you are a caution. I'll worry every minute you are gone."

"Who ever heard of a soldier goin' any place without his side arms?" stormed Gramp. "If I can't wear those side arms I'm not goin'. All the other boys will have 'em."

AST—5

His daughter argued. "You know what happened when you tried to show Harry how that old flame pistol worked," she reminded him. "It's a wonder both of you weren't killed."

"I ain't goin' to do no shootin' with 'em," declared Gramp. "I just want to wear 'em with my uniform. Don't feel dressed without 'em."

His daughter gave up. She knew the argument might go on all day. "All right, pa," she said, "but you be careful."

She got up and went into the house. Gramp stretched his old bones in the sun. It was pleasant here of a June morning on a bench in front of the house.

Little Harry came around the corner and headed for the old man. "What you doing, grandpa?" he demanded.

"Nothin'," Gramp told him.

The boy climbed onto the bench. "Tell me about the war," he begged.

"You go on and play," Gramp told him.

"Aw, grandpa, tell me about that big battle you was in!"

"The battle of Ganymede?" asked Gramp.

Harry nodded. "Uh-huh, that's the one."

"Well," said Gramp, "I can remember it just as if it was yesterday. And it was forty years ago, forty years ago the middle of next month. The Marshies were gettin' their big fleet together out there on Ganymede, figurin' to sneak up on us when we wasn't expectin' 'em around——"

"Who was the Marshies?" asked the boy.

"The Marshies?" said Gramp. "Why that's what we called the Martians. Kind of a nickname for 'em."

"You was fighting them?"

Gramp chuckled. "You're dog-gone right we fit 'em. We fit 'em to a standstill and then we licked 'em, right there at Ganymede. After that the peace was signed and there hasn't been any war since then."

"And that's where you are going?" demanded the boy.

"Sure, they're havin' a big reunion out on Ganymede. First one. Maybe they'll have one every year or two from now on."

"And will the Martian soldiers that you whipped be there, too?"

Gramp scowled fiercely. "They been asked to come," he said. "I don't know why. They ain't got no right to be there. We licked 'em and they ain't got

no right to come."

"Harry!" came the voice of the boy's mother.

The boy hopped off the bench and trotted toward the house.

"What have you been doing?" asked his mother.

"Grandpa's been telling me about the war."

"You come right in here," his mother shouted. "If your grandpa don't know better than to tell you about the war, you should know better than to listen. Haven't I told you not to ask him to tell you about it?"

Gramp writhed on the bench.

"Dog-gone," he said. "A hero don't get no honor any more at all."

"YOU DON'T need to worry," Garth Mitchell, salesman for Robots, Inc., assured Pete Dale, secretary for the Ganymede Chamber of Commerce. "We make robots that are damn near alive. We can fill the bill exactly. If you want us to manufacture you a set of beasts that are just naturally so ornery they will chew one another up on sight, we can do it. We'll ship you the most bloodthirsty pack of nightmares you ever clapped your eyes on."

Pete leveled a pencil at the salesman.

"I want to be sure," he said. "I'm using this big sham battle we are planning for big promotion. I want it to live up to what we promise. We want to make it the biggest show in the whole damn system. When we turn those robots of yours out in the arena, I want to be sure they will go for one another like a couple of wildcats on top of a red-hot stove. And I don't want them to quit until they're just hunks of broken-down machinery. We want to give the reunion crowd a fight that will put the real Battle of Ganymede in the shade."

"Listen," declared Mitchell, "we'll make them robots so mean they'll hate themselves. It's a secret process we

got and we aren't letting anyone in on it. We use a radium brain in each one of the robots and we know how to give them personality. Most of our orders are for gentle ones or hard workers, but if you want them mean, we'll make them mean for you."

"Fine," said Pete. "Now that that's settled, I want to be sure you understand exactly what we want. We want robots representing every type of ferocious beast in the whole system. I got a list here."

He spread out a sheet of paper.

"They're from Mars and Earth and Venus and a few from Titan out by Saturn. If you can think of any others, throw them in. We want them to represent the real beasts just as closely as possible and I want them ornery mean. We're advertising this as the greatest free-for-all, catch-as-catch-can wild animal fight in history. The idea is from the Roman arenas way back in Earth history when they used to turn elephants and lions and tigers and men all into the same arena and watch what they did to one another. Only here we are using robots instead of the real article, and if your robots are as good as you say they are, they'd ought to put on a better show."

Mitchell grinned and strapped up his brief case.

"Just forget about it, Mr. Dale," he counseled. "We'll make them in our factory on Mars and get them to you in plenty of time. There's still six weeks left before the reunion and that will give us time to do a fancy job."

The two shook hands and Mitchell left.

Pete leaned back in his chair and looked out through the yard-thick quartz of the dome which enclosed Satellite City, Ganymede's only place of habitation. That is, if one didn't consider Ganymede prison, which, technically speaking, probably was a place of habitation. Other than for the dome which

enclosed Satellite City and the one which enclosed the prison, however, there was no sign of life on the entire moon, a worthless, lifeless globe only slightly smaller than the planet Mars.

He could see the top of the prison dome, just rising above the western horizon. To that Alcatraz of Space were sent only the most desperate of the Solar System's criminals. The toughest prison in the entire system, its proud tradition was that not a single prisoner had escaped since its establishment twenty years before. Why risk escape, when only misery and death lurked outside the dome?

The Chamber of Commerce offices were located in the peak of the city's dome and from his outer office, against the quartz, Pete had a clear view of the preparations going forward for the reunion which was to celebrate the fortieth anniversary of the Battle of Ganymede.

Far below, at the foot of the magnetically anchored dome, work was progressing on the vast outdoor arena, which would be enclosed in a separate dome, with heat and atmosphere pumped from the larger dome.

On one of the higher snow-swept hills, a short distance from the arena, reared a massive block of marble, swarming with space-armored sculptors. That was the Battle Monument, to be dedicated in the opening ceremonies.

Drift snow, driven by the feeble winds which always stirred restlessly over the surface of this satellite from which the atmosphere was nearly gone, swept over the brown, rolling hills and eddied around the dome. It was cold out there. Pete shivered involuntarily. Down close to 180 degrees below, Fahrenheit. The snow was frozen carbon dioxide.

An inhospitable place to live, but Satellite City was one of the greatest resorts in the entire System. To it, each year, came thousands of celebrities, tens of thousands of common tourists. The guest lists of the better hotels read like

the social register and every show house and café, every night club, every concession, every dive was making money.

And now the Ganymede reunion!

That had been a clever idea. It had taken some string-pulling back in London to get the Solar Congress to pass the resolution calling the reunion and to appropriate the necessary money. But that had not been too hard to do. Just a little ballyhoo about cementing Earth-Mars friendship for all eternity. Just a little clever work out in the lobbies.

This year Satellite City would pack them in, would get System-wide publicity, would become a household word on every planet.

He tilted farther back in his chair and stared at the sky. The greatest sight in the entire Solar System! Tourists came millions of miles to gaze in wonder at that sky.

Jupiter rode there against the black of space, a giant disk of orange and red, flattened at the poles, bulging at the equator. To the right of Jupiter was the sun, a small globe of white, its searing light and tremendous heat enfeebled by almost 500 million miles of space. Neither Io nor Europa were in sight, but against the velvet curtain of space glittered the brilliant, cold pin-points of distant stars.

Pete rocked back and forth in his chair, rubbing his hands gleefully.

"We'll put Ganymede on the map this year," he exulted.

II.

"BUT I DON'T WANT to go to Ganymede," protested Senator Sherman Brown. "I hate space travel. Always get sick."

Izzy Newman almost strangled in exasperation.

"Listen, senator," he pleaded, "don't be a damn fool all your life. We're running you for president two years from now and you need them Martian votes. You can pick up plenty of them by going

out to Ganymede and dedicating this battle monument. You can say some nice things about the Martians and then, quick, before the Earth boys get mad at you, you can say something nice about the Earth. And then you can praise the bravery of the men who fought in the battle and then, just to quiet down the pacifists, praise the forty years of peace we've had. And if you do that you'll make everybody happy and everyone will think you are on their side. You'll get a lot of votes."

"But I don't want to go," protested the senator. "I won't go. You can't bulldoze me."

Izzy spread his hands.

"Listen, senator," he said. "I'm your manager, ain't I? Have I ever given you the wrong steer yet? Have I ever done anything but good for you? Didn't I take you out of a one-horse county seat and make you one of the biggest men of your day?"

"Well," said the senator, "I have done well by myself, if I do say so. And part of the credit goes to you. I hate to go to Ganymede. But if you think I should make——"

"Fine," said Izzy, rubbing his hands together. "I'll fix it all up for you. I'll give the newspaper boys some interviews. I'll have the best ghost writer fix you up a speech. We'll get a half million votes out of this trip."

He eyed Senator Brown sternly.

"There's just two things you've got to do," he warned.

"What's that?"

"Learn your speech. I don't want you forgetting it like you did the time you dedicated the communications building on the moon. And leave that damn candid camera at home."

Senator Brown looked unhappy.

GANYMEDE was plunging into Jupiter's shadow. For a time "night" would fall upon the satellite. Part of the time Europa would be in the sky,

but Europa's light would do little more than make the shadows of the surface deeper and darker.

"Spike" Cardy waited for Ganymede to swing into the shadow. For Spike was going to do something that no man had ever done before. He was going to escape from Ganymede prison, from this proud Alcatraz of Space, whose warden boasted that no man had ever left its dome alive until his time was served.

But Spike was leaving before his time was served. He was going to walk out the northwest port and disappear into the Ganymede night as completely as if he had been wiped out of existence. It was all planned. The planning had been careful and had taken a long time. Spike had waited until he was sure there was no chance for slip-up.

The plan had cost money, had called for pressure being exerted in the right spots, had called for outside assistance that was hard to get. But what others had failed to do, Spike Cardy had done. For was he not the old Spike Cardy of space-racket fame? Had he not for years levied toll upon the interplanetary lines? Were not his men still levying toll on the ships of space? Spike Cardy was tops in gangdom and even now his word was law to many men.

Spike waited until the guard paced past his cell. Then he moved swiftly to his bunk, mounted it and grasped the almost invisible wire of thin spun glass which was tied to one of the ventilator grids. Swiftly, but carefully, he hauled in the wire, taking care to make no noise. At the end of the wire, where it had hung down the ventilator pipe, was a flame pistol.

Like a cat stalking for a kill, Spike moved to the heavily barred cell door. He thrust the pistol inside his shirt and slumped against the bars. He heard the guard returning on his beat.

Spike whimpered softly, as if he were in great pain. The guard heard the sound, his footsteps quickened.

"What's the matter, Cardy? You sick?" asked the guard.

The gangster chief reached a feeble hand through the bars, clutching wildly at the guard's shoulder. The guard leaned nearer. Cardy's left hand moved like a striking snake, the steel fingers closing around the man's throat. At the same instant the flame pistol, its charge screwed down to low power and a pencil point in diameter, flashed across the space between Cardy's shirt and the guard's heart. Just one little burst of white-hot flame, expertly aimed. Just one little chuckle out of the heat gun, like a man might chuckle at a joke. That was all.

The guard slumped closer against the bars. The death-clutch on his throat had throttled down his outcry. Anyone looking at the scene would have thought he was talking to the prisoner.

Cardy worked swiftly. It was all planned out. He knew just what to do.

His right hand tore the ring of keys from the dead man's belt. His fingers found the correct key, inserted it in the lock. The cell door swung open.

Now was the one dangerous point in the whole plan. But Cardy did not falter.

Swiftly he swung the door open and dragged the guard inside. He would have to take the chance no one would see.

Working deftly, he stripped the dead man's trousers off, slipped them on; ripped the coat from his back and donned it. The cap next and the guard's flame pistol.

Cardy stepped outside, closed and locked his cell door, walked along the cell-block cat-walk. His heart sang with exultation. The hard part was over. But his lips were set in grim, hard lines; his eyes were squinted, alert for danger, ready for action.

Only by stern iron will did he keep his pace to a walk. The guard in the next block saw him, looked at him for

a moment and then whirled about and started his march back along the block again.

Only when the guard was out of sight did Spike quicken his pace. Down the flight of stairs to the ground floor, across the floor and out of the cell sections into the exercise yard and to the northwest port.

A dim light burned in the guard house at the port.

Cardy rapped on the door.

The guard opened the door.

"A space suit," said Cardy. "I'm going out."

"Where's your pass?" asked the guard.

"Here," said Cardy, leveling a flame gun.

The guard's hand darted toward the holster at his side, but he didn't have a chance. Spike's gun flared briefly and the guard slumped.

Scarcely glancing at the body, Spike lifted a space suit from its hanger, donned it, and stepped out to the port. Inside the port, he closed the inner lock behind him, spun the outer lock. It swung open and Spike stepped outside.

In great, soaring leaps, thankful for the lesser gravity, he hurried away. To the east he saw the shining dome of Satellite City. To the northwest loomed the dark, shadow-blackened hills.

Spike disappeared toward the hills.

III.

SENATOR Sherman Brown was happy. Also slightly drunk.

He had eluded Izzy Newman and now here he was, squatting on the floor in the Jupiter Lantern, one of the noisiest night clubs in all of Satellite City, taking pictures of two old veterans engaged in an argument over the Battle of Gany-mede.

A crowd had gathered to take in the argument. It was one that stirred imagination and there was always a chance

it might develop into a fight.

Senator Brown plastered the viewfinder of his candid camera against his eye and worked joyfully. Here was a series of pictures that would do justice to his albums.

Gramp Parker pounded the table with his fist.

"We fit you and we licked you," he yelled, "and I don't give a 'tarnal dang how we come to do it. If your generals had been so all-fired smart, how come we licked the stuffin' out of you?"

Jurg Tec, a doddering old Martian, pounded the table back at Gramp.

"You Earthians won that battle by pure luck," he squeaked and his squeak was full of honest rage. "You had no right to win. By all the rules of warfare you were beaten from the start. Your strategy was wrong. Your space division was wrong, your timing was wrong. Alexander, when he brought his cruisers down to attack our camp, should have been wiped out."

"But he wasn't," Gramp yelled.

"Just luck," Jurg Tec squeaked back. "Fight that battle over again and the Martians would win. Something went wrong. Something that historians can't explain. Work it out on paper and Mars wins every time."

Gramp pounded the table with both fists. His beard twitched belligerently.

"But dang your ornery hide," he screamed, "battles ain't fit on paper. They're fit with men and ships and guns. And men count most. The men with guts are the ones who win. And battles ain't fit over, neither. There ain't no second chance in war. You either win or lose and there ain't no rain checks handed out."

The Martian seemed to be choking with rage. He sputtered in an attempt to find his voice.

Gramp gloated like a cat that has just polished off a canary.

"Same as I was tellin' you," he asserted. "One good Earthman can lick

ten Marshies any time of day or night."

Jurg Tec sputtered in helpless anger.

Gramp improved upon his boast. "Any time of day or night," he said, "blindfolded and with one hand tied behind him."

Jurg Tec's fist lashed out without warning and caught Gramp square on the beard. Gramp staggered and then let out a bellowing howl and made for the Martian. The crowd yelled encouragement.

Jurg Tec, retreating before Gramp's flailing fists, staggered over the kneeling Senator Brown. Gramp leaped at him at the same instant and the three were tangled on the floor in a flurry of lashing arms and legs.

"Take that," yelled Gramp.

"Hey, look out for my camera," shrieked the senator.

The Martian said nothing, but he hung a beauty on the senator's left eye. He had aimed it at Gramp.

A table toppled with a crash. The crowd hooted in utter delight.

The senator glimpsed his camera on the floor, reached out and grabbed it. Someone stepped on his hand and he yelled. Jurg Tec grabbed Gramp by the beard.

"Cut it out," boomed a voice and two policemen came charging through the crowd. They jerked Gramp and Jurg Tec to their feet. The senator got up by himself.

"What you fellows fighting about?" asked the big policeman.

"He's a dog-gone Marshy," yelled Gramp.

"He said one Earthy could lick ten Martians," squeaked Jurg Tec.

The big policeman eyed the senator. "What have you got to say for yourself?" he asked.

The senator was suddenly at a loss for words. "Why, nothing, officer, nothing at all," he stammered.

"I don't suppose you were down there

rolling around with them?" snarled the policeman.

"Why, you see, it was this way, officer," the senator explained. "I tried to separate them. Tried to make them quit fighting. And one of them hit me."

The policeman chuckled. "Peacemaker, eh?" he said.

The senator nodded, miserably.

The officer turned his attention toward Gramp and Jurg Tec. "Fighting the war over again," he said. "Can't you fellows forget it? The war was over forty years ago."

"He insulted me," Jurg Tec squeaked.

"Sure, I know," said the officer, "and you were insulted pretty easy."

"Listen, here, officer," said the senator. "If I take these two boys and promise you they won't make any more disturbance, will you just forget about this?"

The big policeman looked at the little policeman.

"Who are *you*?" the little policeman asked.

"Why, I'm—I'm Jack Smith. I know these two boys. I was sitting talking with them before this happened."

The two policemen looked at one another again.

Then they both looked at the senator.

"Why, I guess it would be all right," agreed the little policeman. "But you see they keep peaceable or we'll throw all three of you in the jug."

They eyed him sternly. The senator shifted uneasily. Then he stepped forward and took Gramp and Jurg Tec by the arm.

"Come on, boys, let's have a drink," he suggested.

"I STILL SAY," protested Gramp, "that one Earthman can lick ten Marshies——"

"Here, here," warned the senator, "you pipe down. I promised the police you two would be friends."

"Friends with him?" asked Gramp.

"Why not?" asked the senator. "After all, this reunion is for the purpose of demonstrating the peace and friendship which exists between Mars and Earth. Out of the dust and roar of battle rises a newer and clearer understanding. An understanding which will lead to an everlasting peace——"

"Say," said Gramp, "danged if you don't sound like you was makin' a speech."

"Huh," said the senator.

"Like you was makin' a speech," said Gramp. "Like you was one of them political spellbinders that are out gettin' votes."

"Well," said the senator, "maybe I am."

"With that eye of yours," Gramp pointed out, "you ain't in no shape to make any speech."

Senator Brown strangled on his drink. He set down his glass and coughed.

"What's the matter with you?" asked Jurg Tec.

"I forgot something," the senator explained. "Something very important."

"It can wait," Jurg Tec said. "I'll buy the next round."

"Sure," agreed Gramp, "ain't nothin' so important you can't have another drink."

"You know," said the senator, "I *was* going to make a speech."

The two old soldiers stared at him in disbelief.

"It's a fact," the senator told them, "but I can't with this eye. And will I catch hell for not making that speech! That's what I get for sneaking out with my camera."

"Maybe we can help you out," suggested Gramp. "Maybe we could square things for you."

"Maybe we could," squeaked the Martian.

"Listen, boys," said the senator, "if I were to go out in a ship for a tour of the surface and if the ship broke down and I couldn't get back in time to make

my speech, nobody would blame me for that, would they?"

"You're dang right they wouldn't," said Gramp.

"How about the eye?" asked Jurg Tec.

"Shucks," said Gramp, "we could say he run into somethin'."

"Would you boys like to come along with me?" asked the senator.

"Bet your life," said Gramp.

Jurg Tec nodded.

"There's some old battle hulls out there I'd like to see," he said. "Ships that were shot down during the battle and just left there. Shot up too bad to salvage. The pilot probably would land and let us look at one or two of them."

"Better take along your camera," suggested Gramp. "You'd ought to get some crackin' good pictures on one of 'em old tubs."

IV.

THE NAVIGATOR tore open the door of the control room, slammed it behind him and leaned against it. His coat was ripped and blood dripped from an ugly gash across his forehead.

The pilot started from his controls.

"The robots!" screamed the navigator. "The robots are loose!"

The pilot blanched. "Loose!" he screamed back.

The navigator nodded, panting.

In the little silence they could hear the scraping and clashing of steel claws throughout the ship.

"They got the crew," the navigator panted. "Tore them apart, back in the engine room."

The pilot looked through the glass. The surface of Ganymede was just below. He had been leveling off with short, expert rocket blasts, for an easy coast into Satellite City.

"Get a gun!" he shouted. "Hold them off! Maybe we can make it."

The navigator leaped for the rack where the heavy flame rifles hung. But he was too late.

The door buckled beneath a crushing weight. Savage steel claws caught it and ripped it asunder.

The pilot, glancing over his shoulder, saw a nightmare of mad monsters clawing into the control room. Monsters manufactured at the Robots, Inc., plant on Mars, enroute to Satellite City for the show at the Ganymede Battle reunion.

The flame rifle flared, fusing the hideous head of one monster, but the tentacles of another whipped out, snared the pilot with uncanny ease. The pilot screamed, once—a scream chopped short by choking bands of steel.

Then the ship spun crazily, out of control, toward the surface.

"AN OLD cruiser hull is right over that ridge," the pilot told the senator. "It's in pretty good condition, but the nose was driven into the ground by the impact of its fall, wedged tight into the rock, so that all hell and high water couldn't move it."

"Earthian or Marshy?" asked Gramp.

The pilot shook his head. "I'm not sure," he said. "Earth, I think."

The senator was struggling into his space suit.

"You remember the deal we made?" he asked the pilot. "You're to say your ship broke down. You'll know how to explain it. So you couldn't get me back in time to make the speech."

The pilot grinned. "Sure do, senator," he said.

Gramp paused with his helmet poised above his head. "Senator!" he shouted. He looked at the senator.

"Just who in tarnation are you?" he asked.

"I'm Senator Sherman Brown," the senator told him. "Supposed to dedicate the battle monument."

"Well, I'll be a freckled frog!" said Gramp.

Jurg Tec chuckled.

Gramp whirled on him. "No wise-

cracks, Marshy," he warned.

"Here, here," shouted the senator. "You fellows quiet down. No more fighting."

Space-armored, the four of them left the ship and tramped up the hill toward the ridge top.

Faintly in his helmet-phones, Gramp heard the crunch of carbon dioxide snow beneath their feet, its hiss against the space suits.

Jupiter was setting, a huge red and orange ball with a massive scallop gnawed from its top half. Against this darkened, unseen segment of the primary rode the quarter moon of tiny Io, while just above, against the black of space, hung the shining sickle of Europa. The sun had set many hours before.

"Pretty as a Christmas tree," Gramp said.

"Them tourists go nutty over it," the pilot declared. "That taxi of mine has been worked to death ever since the season started. There's something about old Jupiter that gets them."

"I remember," Jurg Tec said, "that it was just like this before the battle. My pal and I walked out of camp to look at it."

"I didn't know you Marshies ever got to be pals," said Gramp. "Figured you were too danged mean."

"My pal," said Jurg Tec, "was killed the next day."

"Oh," said Gramp.

They walked in silence for a moment.

"I'm right sorry about your pal," Gramp told the Martian then.

They topped the ridge.

"There she is," said the pilot, pointing.

Below them lay the dark shape of a huge space ship, resting crazily on the surface, with the stern tilted at a grotesque angle, the nose buried in the rock-hard soil.

"Earth, all right," said Gramp.

They walked down the hillside toward the ship.

In the derelict's side was a great hole, blasted by a shot of long ago, a shot that echoed in dim memory of that battle forty years before.

"Let's go in," said the senator. "I want to take some pictures. Brought some night equipment along. Take pictures in pitch black."

Something moved inside the ship, something that glinted and shone redly in the light of setting Jupiter.

Astonished, the four fell back a step.

A SPACE-ARMORED man stood just inside the ship, half in shadow, half in light. He held two flame pistols in his hands and they were leveled at Gramp and the other three.

"All right," said the man, and his voice was savage, vicious, with just a touch of madness in it, "I got you covered. Just hoist out your guns and let them drop."

They did not move, astounded, scarcely believing what they saw.

"Didn't you hear me!" bellowed the man. "Drop your guns onto the ground."

The pilot went for his flame pistol, in a swift blur of motion that almost tricked the eye.

But the gun was only half out of its holster when one of the guns in the hands of the man inside the ship blasted with a lurid jet of flame. The charge struck the pilot's space suit, split it open with the fury of its energy. The pilot crumpled and rolled, with arms flapping weirdly, down the hill, to come to rest against the old space derelict. His suit glowed cherry-red.

"Maybe now you know I ain't fooling," said the man.

Gramp, with one finger, carefully lifted his pistol from its holster and let it drop to the ground. Jurg Tec and the senator did likewise. There was no use being foolish. Not when a killer had you covered with two guns.

The man stepped carefully out of the

ship and waved them back. He holstered one of his guns, stooped and scooped up the three weapons on the ground.

"What's the meaning of this?" demanded the senator.

The man chuckled.

"I'm Spike Cardy," he said. "Maybe you heard of me. Only man to escape from Ganymede prison. Said nobody could break that crib. But Spike Cardy did."

"What are you going to do with us?" asked the senator.

"Leave you here," said Spike. "I'm going to take your ship and leave you here."

"But that's murder," shouted the senator. "We'll die. We only have about four hours' air."

Spike chuckled again. "Now," he said, "ain't that just too damn bad."

Jurg Tec spoke.

"But you lived here somehow. It's been three weeks since you escaped. You haven't been in a space suit all that time. You haven't had enough air tanks to hold out that long."

"What are you getting at?" asked Spike.

"Why," said Jurg Tec, "just this. Why don't you give us a chance to live? Why don't you tell us how you did it? We might be able to do the same, keep alive until somebody found us. After all, you are taking our ship. It won't serve any purpose to kill us. We haven't done anything against you."

"Now," said Spike, "there's some reason to that. And I'll tell you. Friends of mine fixed up a part of this old ship, walled it off and installed a lock and a small atmosphere generator. Atmosphere condenser, rather. 'Cause there's air enough here, only it ain't thick enough. When I made my getaway I came out here and waited for a ship that was supposed to pick me up. But the ship didn't come. Something went

wrong and it didn't come. So I'm taking yours."

"That's sporting of you," said the senator. "Would you mind telling us whereabouts in the ship you've got this hideaway?"

"Why, no," said Spike. "Glad to. Anything to help you out."

But there was something about the way he said it, the ugly twist to his mouth, the mockery in his words, that Gramp didn't like.

"Just go down into the nose of the ship," said Spike. "You can't miss it."

An evil smile tugged at Spike's mouth.

"Only," he said, "it won't do you a damn bit of good. Because the condenser broke down about half an hour ago. It can't be fixed. I tried. I was getting ready to try to make it back to Satellite City and take my chances there when you showed up."

"It can't be fixed?" asked the senator.

Spike shook his head inside his space suit.

"Nope," he said, cheerfully, "there's a couple of parts broke. I tried to weld them with my flame gun, but it didn't work. I ruined them entirely."

V.

SPIKE BACKED away, toward the top of the ridge.

"Stay back," he warned, with his gun still leveled. "Don't try to follow. I'll let you have it if you do."

"But," shrieked the senator, "you don't mean to leave us here, do you? We'll die!"

The bandit waved his pistol toward the southeast.

"Satellite City is over that way. You can make it on four hours of air. I did."

His laugh boomed in their helmets.

"But you won't. Not creaking old scarecrows like you."

Then he was gone over the ridge.

Gramp, suddenly galvanized into action, leaped toward the lifeless body of

the pilot. He tugged the space-suited figure over and his hand reached out and jerked the flame pistol free.

One swift glance told him it was undamaged.

"You can't do that!" Jurg Tec yelled at him.

"Get outta my way, Marshy," yelled Gramp. "I'm goin' after him."

Gramp started up the hill.

Topping the ridge, he saw Spike halfway to the ship.

"Come back and fight," Gramp howled, waving his gun. "Come back and fight, you ornery excuse for a polecat."

Spike swung about, snapped a wild burst of flame along his backtrail and then fled, in ludicrous hops, toward the space ship.

Gramp halted, aimed the flame pistol carefully and fired. Spike turned a somersault in mid-air and sprawled on the ground. Gramp saw the guns Spike had taken from them flash redly in the Jupiter-light as the flame struck home.

"He dropped the guns!" Gramp yelled.

But Spike was up again and running, although his left arm hung limply from the shoulder, swinging freely as he hopped over the surface.

"Too far away," grunted Jurg Tec, overtaking Gramp.

"I had 'im dead center," Gramp yelled, "but it was a mite long range."

Spike reached the ship and leaped into the port.

Cursing, Gramp laid down a blast of flame against the ship as the bandit swung in the outer lock.

"Dang it," shrieked Gramp, "he got away."

Dejectedly the two old veterans stood and stared at the ship.

"I guess this ends it for us," said Jurg Tec.

"Not by a dang sight," declared Gramp. "We'll make it back to Satellite City easy."

But he didn't believe it. He knew they wouldn't.

He heard the sound of footsteps coming down the hill and turned. The senator was hurrying toward them.

"What happened to you?" demanded Jurg Tec.

"I fell and twisted my ankle," the senator explained.

"Sure," said Gramp, "it's plumb easy for a feller to sprain his ankle. Especially at a time like this."

The ground shuddered under their feet as the ship leaped out into space with rockets blasting.

GRAMP plodded doggedly along. He heard the hissing of the snow against his space suit. Heard it crunching underfoot. Heard the stumbling footsteps of the other two behind him.

Jupiter was lower in the sky. Io had moved away from its position against the darkened segment of the primary, was swinging free in space.

Before him Gramp saw the bitter hills, covered with drift snow, tinted a ghastly red by the flood of Jupiter-light.

One foot forward and now another. That was the way to do it. Keep plugging away.

But he knew it wasn't any use. He knew that he would die on Ganymede.

"Forty years ago I fit here and came through without a scratch," he told himself. "And now I come back to die here."

He remembered that day of forty years before. Remembered how the sky was laced with fiery flame-ribbons and stabbing ray-beams. How ships, their guns silenced, rammed enemy craft and took them with them to the surface.

"We'll never make it," moaned the senator.

Gramp swung on him savagely; a steel-sheathed fist lifted menacingly.

"You stop your bawlin'," he shouted. "You sound like a sick calf. I'll smack

you down if I hear one more peep out of you."

"But what's the use of fooling ourselves?" the senator cried. "Our air is nearly gone. We don't even know if we're going in the right direction."

Gramp roared at him.

"Buck up, you spineless jackass. You're a big man. A senator. Remember that. You gotta get back. Who'd they get to make all 'em speeches if you didn't get back?"

Jurg Tec's voice hissed in Gramp's helmet. "Listen!"

Gramp stood still and listened.

But there was nothing to hear. Just the hiss of the snow against his suit.

"I don't hear nothin'," Gramp said.

And then he heard it—a weird thunder that seemed to carry with it an indefinable threat of danger. A thunder like the stamping of many feet, like the measured march of hoofs.

"Ever hear anything like that, Earthy?" asked the Martian.

"It isn't anything," shrieked the senator. "Nothing at all. We just imagine it. We all are going crazy."

The thunder sounded nearer and nearer—clearer and clearer.

"There ain't supposed to be a livin' thing on Ganymede," said Gramp. "But there's somethin' out there. Somethin' alive."

He felt prickles of fear run up his spine and ruffle the hair at the base of his skull.

A long line of things moved out of the horizon haze and into indistinct vision—a nightmare line of things that shone and glittered in the rays of Jupiter.

"My Lord," said Gramp, "what are they?"

He glanced around.

To their left was a deep cut-bank, where erosion of long past ages had scooped out a deep, but narrow depression in the hillside.

"This way," Gramp yelled and leaped away, heading for the cut-bank.

The line of charging horrors was nearer when they reached the natural fortress.

Gramp looked at Jurg Tec.

"Marshy," he croaked, "if you never fit before, get ready for it now."

Jurg Tec nodded grimly, his flame pistol in his fist.

The senator whimpered.

Gramp swung on him, drew back his fist and let drive a blow that caught the senator in the center of his breast-plate and sent him sprawling.

Gramp snarled at him.

"Get out your gun, dang you," he shrieked, "and pretend you are a man."

THE BUNCHED monsters were closing in—a leaping, frightful mass of beasts that gleamed weirdly in the moon-and-primary light. Massive jaws and cruel, taloned claws and whipping tentacles.

Gramp leveled his flame gun.

"Now," he shouted, "let 'em have it."

From the jaws of the cut-bank leaped a blast of withering fire that swept the monsters as they charged and seemed to melt them down. But those behind climbed over and charged through the ones the flame had stopped and came on, straight toward the men who crouched in the shadow of the hill.

Gramp's gun was getting hot. He knew that in a moment it would be a warped and useless thing. That it might even explode in his hand and kill all three of them. For the flame gun is not built to stand continuous fire.

And still the things came on.

Before the cut-bank lay a pile of bodies that glowed metal-red where the pistol flames had raked them.

Gramp dropped his gun and backed away toward the wall of the cut-bank.

Jurg Tec still crouched and worked his pistol with short, sharp, raking jabs, trying to keep it from over-heating.

In a smaller recess crouched the whimpering senator, his gun still in its holster.

Cursing him, Gramp leaped at him, hauled out the flame gun and shoved the senator to one side.

"Let your gun cool, Marshy," Gramp yelled.

He aimed the new weapon at a shambling thing that crawled over the barricade of bodies. Calmly he blasted it straight between the eyes.

"We'll need your gun later," Gramp yelled at Jurg Tec.

A shadowy something, with spines around its face and with a cruel beak just below its eyes, charged over the barricade and Gramp blasted it with one short burst.

The attack was thinning out.

Gramp held his pistol ready and waited for more. But no more came.

"What are 'em dog-gone things?" asked Gramp, jerking his pistol toward the pile of bodies.

"Don't know," said the Martian. "There aren't supposed to be any beasts on Ganymede."

"They acted dog-gone funny," Gramp declared. "Not exactly like animals. Like something you wound up and put down on the floor. Like toys. Like the toy animals I got my grandson for Christmas year or two ago. You wound 'em up and the little rascals run around in circles."

Jurg Tec stepped outside the cut-bank, nearer to the pile of bodies.

"You be careful, Marshy," Gramp called out.

"Look here, Earthy," yelled the Martian.

Gramp strode forward and looked. And what he saw—instead of flesh and bone, instead of any animal structure—were metal plates and molten wire and cogs of many shapes and sizes.

"Robots," he said. "I'll be a bow-legged Marshy if that ain't what they are. Nothin' but dog-gone robot animals."

The two old soldiers looked at one another.

"It was a tight squeeze at that," said Jurg Tec.

"We sure licked hell out of 'em," Gramp exulted.

"Say," said Jurg Tec, "they were supposed to have a robot wild-animal fight at Satellite City. You don't suppose these things were the robots? Got loose some way?"

"By cracky," said Gramp, "maybe that explains it."

He straightened from his examination of the heap of twisted, flame-scarred metal and looked at the sky. Jupiter was almost gone.

"We better get goin'," Gramp decided.

VI.

"THAT must be them," said the pilot. He pointed downward and Izzy Newman looked where he pointed.

He saw two figures.

One of them was erect, but staggering as it marched along. Beside it limped another, with its arm thrown across the shoulders of the first to keep from falling.

"But there's only two," said Izzy.

"No, there's three," declared the pilot. "That one fellow is holding the second one up and he's dragging the third fellow along by his arm. Look at him. Just skidding along the ground like a sled."

The pilot dove the plane, struck the ground and taxied close.

Gramp, seeing the plane, halted. He let go of the senator's arm and eased Jurg Tec to the ground. Then, tottering on his feet, gasping for what little air remained within his oxygen tank, he waited.

Two men came out of the plane. Gramp staggered to meet them.

They helped him in and brought in the other two.

Gramp tore off his helmet and breathed deeply. He helped Jurg Tec

to remove his helmet. The senator, he saw, was coming around.

"Dog-gone," said Gramp, "I did somethin' today I swore I'd never do."

"What's that?" asked Jurg Tec.

"I swore," said Gramp, "that if I ever had a chance to help a Marshy, I wouldn't lift a finger. I'd just stand by and watch him kick the bucket."

Jurg Tec smiled.

"You must have forgot yourself," he said.

"Dog-gone," said Gramp, "I ain't got no will power left, that's what's the matter with me."

THE REUNION was drawing to a close. Meeting in extraordinary convention, the veterans had voted to form an Earth-Mars Veterans' Association. All that remained was to elect the officers.

Jurg Tec had the floor.

"Mr. Chairman," he said, "I won't make a speech. I'm just going to move a nomination for commander. No speech is necessary."

He paused dramatically and the hall was silent.

"I nominate," said Jurg Tec, "Captain Johnny Parker, better known as Gramp."

The hall exploded in an uproar. The chairman pounded for order, but the thumping of his gavel was scarcely a whisper in the waves of riotous sound that swept and reverberated in the room.

"Gramp!" howled ten thousand throats. "We want Gramp."

Hands lifted a protesting Gramp and bore him to the platform.

"Cut it out, dog-gone you," yelled Gramp, but they only pounded him on the back and yelled at him and left him standing there, all alone beside the chairman's table.

Before him the convention hall rocked and weaved in uproar. Bands played and their music did no more than form a background for the boisterous cheering. Newsmen popped up and

down, taking pictures. The man beside the microphone crooked a finger at the old man and Gramp, hardly knowing why he did it, stumbled forward, to stand before the mike.

He couldn't see the crowd so well. There was something the matter with his eyes. Sort of misted up. Funny way for them to act. And his heart was pounding. Too much excitement. Bad for the heart.

"Speech!" roared the ten thousand down below. "Speech! Speech!"

They wanted him to make a speech! They wanted old Gramp Parker to talk into the mike so they could hear what he had to say. He'd never made a speech before in all his life. He didn't know how to make a speech and he was scared.

Gramp wondered, dimly, what Celia would think of all these goings-on. Hoppin' mad, probably. And little Harry. But Harry would think his grandpa was a hero. And the bunch down at Grocer White's store.

"Speech," thundered the convention hall.

Out of the mist of faces Gramp picked one face—one he could see as plain as day. Jurg Tec, smiling at him, smiling that crooked way the Martians smile. Jurg Tec, his friend. A dog-gone Marshy. A Marshy who had stood shoulder to shoulder with him out on

the surface. A Marshy who had stood with him against the metal beasts. A Marshy who had slogged those bitter miles beside him.

There was a word for it. Gramp knew there was a word. He groped madly in his brain for the single word that would tell the story.

And then he had it. It was a funny word. Gramp whispered it. It didn't sound right. Not the kind of word he'd say. Not what anyone would expect old Gramp Parker to say. A word that would fit better in the mouth of Senator Sherman Brown.

Maybe they'd laugh at him for saying it. Maybe they'd think he was just a damn old fool.

He moved closer to the mike and the uproar quieted, waiting.

"Comrades——" Gramp began and then he stopped.

That was the word. They were comrades now. Marshies and Earthies. They'd fought in bitter hatred, each for what he thought was right. Maybe they had to fight. Maybe that war was something that was needed. But it was forty years ago and all its violence was a whisper in the wind—a dim, old memory blowing from a battlefield where hatred and violence had burned itself out in one lurid blast of strength.

But they were waiting. And they hadn't laughed.

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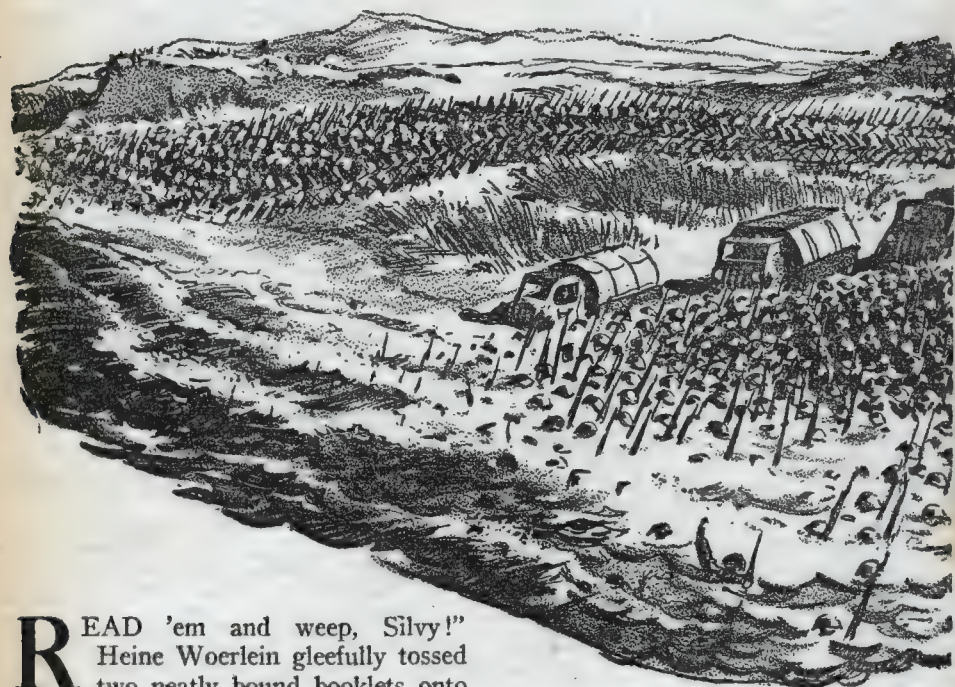
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"SEAWARD!"

by Malcolm Jameson

Two rival chemists—two rival governments—inorganic vs. organic chemistry and—the sea!



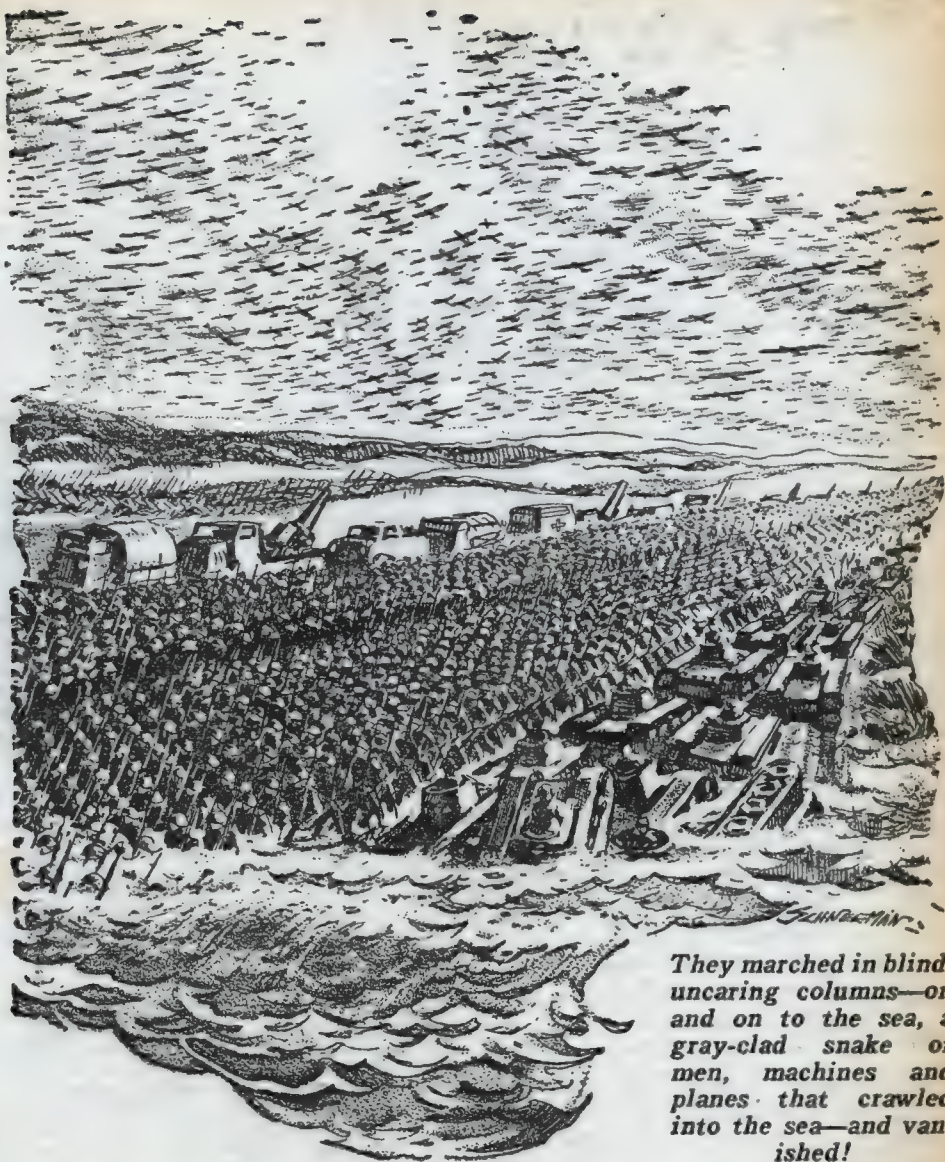
READ 'em and weep, Silvy!" Heine Woerlein gleefully tossed two neatly bound booklets onto the reading table, a triumphant grin stretching from ear to ear. Sylvester Upham, his roommate, jerked his head up from the microscope to which his eye had been glued, and began undrapping his long legs from about the stool on which he was perched. The lanky "Silvy" faced his jubilant associate inquiringly. Then he recognized the booklets. They were their theses—back already, graded.

The exuberant Heine was displaying his own, the big blue "A" with a "Superlative Work" scrawled across the title page standing out like a Neon sign. Syl-

vester's eye sought his own. That was decorated by the letter "B", and the comment was "Could have been better." He took it in, half suspecting it was one of Heine's jokes. Perhaps his work "Transient Mutations" could have been better, but even as it stood, he didn't see how the dull subject "Neglected Potentialities of the Silicoids" could have rated an "A."

"That proves something or other," crowed Heine, dancing.

"It proves, you big fish, that when you submit a thesis to a prof that's nuts about silicoids it pays to write about



*They marched in blind,
uncaring columns—on
and on to the sea, a
gray-clad snake of
men, machines and
planes that crawled
into the sea—and van-
ished!*

silicoids! Now if he——"

"Yeah, I know. If he could see any use playing around with a lot of deformed hormones and inverted enzymes, you'd have led the class. It's applied chemistry we're studying, pal, something somebody can *use*. You'd better come down out of the clouds and start thinking about how to stick to a pay roll somewhere. Don't forget, next month

AST—6

we'll be out in the cold, cold world. Out there, it is not how interesting it is, but will it pay!"

It was the old battle. The two had roomed together for five years, and the good-natured conflict between the practical-minded Woerlein and the dreamy Upham had raged unceasingly. At bottom, each had the greatest respect for the other's mentality, but that circum-

stance only rendered the friendly rivalry the keener.

When they left school, Woerlein went straight into the laboratories of the great Middle-Europe Chemical Cartel, while Upham accepted a professorship in a small Scottish college. The former, prodded by the unrelenting system of the armylike Cartel, immediately started producing, with the regularity of a metronome, miracle after miracle of development in the field of industrial chemistry.

Upham's progress was not so swift or so consistent. But he had leisure and the freedom to experiment in his own bold fashion in a realm unthought of by the industrialists, with the result that every five years or so he was able to announce to a breathless world some unprecedented combination of molecules or living cells. Such a discovery would at one leap put him ahead of the plodding Woerlein in their race toward fame. They wrote each other frequently, and now and then met. It was always a merry occasion, full of boasting and friendly gibes.

It was when they were past forty that Upham's extraordinary plant creation, the Omniflor, was given to the public, an event that placed him definitely in the forefront of Britain's bio-chemists. This remarkable bit of synthetic magic produced not only a super-rubber from its stalk juices, a long-fibred natural silk from its seed-bolls and a palatable and nutritious fruit, but the substance *purprephyll* which gave the odd violet color to its leaves also generated a powerful essential oil which was found to be the perfect specific for cancer. Upham, now bald, bearded and chronically stooped from trying to adapt his six-feet-three of gaunt frame to the conventional limitations of furniture and architecture, had followed up his triumph by sending a taunting telegram to his old side-kick, Woerlein, mailing at the same time a smallish bale of press clippings. Back

came the answer.

GOOD WORK. WHAT FERTILIZER DO YOU USE? REGARDS HEINE.

And so it went. Upham grinned when he got it. He knew his thrust had been well parried—for his Omniflor would not seed without *Proto-gen*, that mysterious compound made by the Middle-Europe Cartel. *Proto-gen* was the brain-child of Heine Woerlein, the wizard of the Continent.

IMMERSED in their research, the wasteful orgy of another great war was on them before they knew it. The Central Alliance, a combine of Continental autocracies, had determined to crush the last of the democracies. These, in turn, allied themselves together and fought back. It became crystal-clear in a very few months that this conflict was only soluble through the extermination of one or the other of the participants. It was a war of whole populations, one in which quarter was neither asked nor given. Two distinct ideologies, two technocracies, two civilizations were grappling, and the future of the world hung on the outcome.

It was inevitable that the two scientists should find their services commandeered by their respective governments. Woerlein, being more practical, was made a general on the staff of the High Command. Upham, shrinking from administrative duties, accepted a commission as colonel and fell into the role of advisor to the Chief of Chemical Warfare of the Allied Democracies, a General Amos Canby.

Under the circumstances, communication between the former roommates virtually ceased, although once in a while they did manage to exchange greetings through another classmate who lived in a neutral country. Mainly, they kept track of each other's activities through recognition of new and ingenious methods of offense and defense. As was

to be expected, the Central armies had sprung several surprises that clearly showed the chemical bias of Heine Woerlein—the inorganic field—whereas Upham's counter measures reflected his own tendencies, the manipulation of living organisms.

Honors were about even, and the war still dragged wearily on without noteworthy advantage to either side until the Centralists very nearly conquered by their introduction of the "glassy death." Upham first heard of this in his secluded laboratory hidden in the recesses of a Labrador fjord when he read the frenzied dispatch of his army superior General Canby. Without warning, tens of thousands of Democratic soldiers had stiffened, suddenly paralyzed, and the paralysis passed quickly into a rigor. Within a week, the stricken men's tissues were gradually transformed into a substance much like glass.

The gloating code message which the exultant Heine could not resist sending his old antagonist of the classroom gave Upham the clue. Their neutral intermediary sent him a slip of paper written by Woerlein to be forwarded to Upham. It reached him in the same week as Canby's urgent appeal.

The message read: "A/B equal C/D. That proves something or other!"

Like a flash, the memory of the day when they received their thesis marks glowed in the mind of Sylvester Upham. The plain English sentence was the key to the code. Translated, the mathematical equation signified: "Just as my grade of 'A' was superior to your grade of 'B', so the Centralists are superior to the Democrats." In like manner!

Upham radioed the university for a verbatim copy of the Woerlein thesis. In that youthful work of over two decades ago was the suggestion of certain possible uses of the silicoids. Now it had come to fruition—in the "glassy death."

In another week, Upham had forwarded to General Canby a full analysis

of the "glassy death" with directions as to how to nullify that malignant, ray-induced disease. Once more the war fell back into its previous condition of wasteful stalemate. Prompted by the reference to the almost forgotten college theses, Upham started his return message to his old side-kick, Heine. It read: "Your arithmetic worse than ever. True formula is expressed by $H/H; C$ equals O ."

With this cryptic message on its way, Upham dug out his own adolescent thesis and began its intensive study.

FROM THAT DAY on, a deep silence was all that could be had from the Democratic laboratory in the frozen north. General Canby felt that the counteraction of the "glassy death" was all well enough, but after all, it was a purely negative measure. Something more aggressive was urgently needed. He flooded the air with appeals to Upham to provide him with something more. The other arms of the service were slowly but remorselessly being driven back. It was up to science to devise the new weapon that would overwhelm the enemy and turn the menace of defeat into victory. That was Upham's job.

Canby's imperative messages to Labrador either evoked no response, or else a meager "Progress satisfactory"—a message maddening in its vagueness, conveying nothing.

Canby turned his routine duties of stimulating the production of poison gases and other ordinary chemical activities over to subordinates, and arranged for a cruiser to take him to Labrador. General Canby was a business man, primarily, and he had never fully trusted his distinguished colonel advisor. The suspicion was kindling in his mind that the eccentric scientist might have forgotten all about the war and had become immersed in some characteristic scheme of his own, such as altering the genes of

seaweed so that it would produce honey.

As the *Viper* turned her bow in toward the entrance to the fjord that indented the barren, glacier-striped coast of Labrador, General Canby's chubby, plump form was on the bridge, his eyes squinted beneath a worried brow, scanning the inhospitable shore for the first sight of the camouflaged buildings that housed his most important experimental station. On the forecastle, men were making ready the lines for docking.

Abruptly the curt order of the captain of the *Viper* cut the silence. "Full speed astern, both engines!" Dead ahead there was an acre of tiny ripples, the indication of a shoal or considerable rock just awash. Everyone on the bridge was studying the twinkling waters through glasses.

"A school of fish, sir!" reported the quartermaster.

"Rats!" exclaimed the captain, in the same instant.

And rats they were, hundreds of them. As the onrushing stem clove the water under the renewed push of the screws, the *Viper* forged ahead, split the approaching patch of roughened water, and went on through. General Canby and the captain rushed to the wing of the bridge and gazed down at the swarm of swimming animals slipping past in the quickwater. Rats, spotted brown rats, swimming vigorously, some clutching a moment at a seam or rivet of the cruiser's side as it slid by them. In the wake astern, the two halves of the sundered school reunited, and as the ship drew away toward the dock, the watching men on the bridge lost to view the area of tiny wavelets. The school of swimming rodents had gone on out into the broad Atlantic.

"Must be fumigating up there," observed the captain dryly, waving at the laboratory on the crest of the hill.

Canby made no answer, but he was thoughtful. What could Upham be doing with rats? The vagaries of that

man's mind were unpredictable. Canby pretended a patience he was far from feeling, while the ship was being placed alongside the dock.

He left his aides on board, and pushed on up the rocky path alone, panting a little from the arduous ascent. When he reached the crest and had passed the sentries at the gate, he noted with astonishment that the yard surrounding the main building contained many wire pens. Some of them were filled with the same brown rats the *Viper* had met, others were empty. It was just as Canby had feared. Upham had gone off on one of his tangents—and at such a time! Rats, indeed, when the fate of the world was at stake!

IT WAS IN the far gallery that General Canby found his man. The lean figure was bending over a huge ledger, the straggly, bifurcated beard hanging down ludicrously over the trim army uniform. Upham was making entries in the ledger from a sheaf of loose sheets. Canby could not fail to be struck by the contrast of this man's impractical, scholarly countenance with his military garb. Here was another of the absurdities of war. This man they needed—and to pay him adequately, he must be given rank, for the War Office insisted such important work must be under army control. Control! Even a greater absurdity. A man like Upham was controllable by nothing except his own whimsical interest.

General Canby approached the writing man upon whom he depended so heavily, casting a critical eye about the littered work tables as he threaded his way among them. Everywhere lay rats, dead rats, in all stages of dissection. On one table was a large cage, like a parrot cage, containing a half-dozen live ones. They were brownish in color, almost yellow, and spotted with dark spots.

"Just in time!" called out Upham, gayly, hearing his approach and looking

up. He was as matter-of-fact in manner as if the conversation had just been resumed after a few minutes' interval. It had been more than three years since Canby had deposited him here and put the station at his disposal. General Canby was a trifle nettled by the informality of the greeting, and after seeing what he had seen on the way in, he was in no mood for pleasantries.

"If you are wasting your time on Bubonic Plague carriers——"

"Dear me, no!" disclaimed Colonel Upham, in mild surprise. "That is too ineffective. Besides, I understand it is considered unethical to kill people by ordinary disease germs. I have the book you gave me, you know. The one on the Rules of War. It is all right to shoot, stab, bomb, strangle, burn—all those things—but germs are out. Not orthodox! But I haven't found anything in the book about this. It couldn't be, because I have just found out about it myself. I got the idea from Heine——"

"Heine?" bristled the general.

"Yes, Heine—Heine Woerlein, my old roommate. *You* know. He is head of Chemical Warfare on the Central side. We did our theses together. That 'glassy death' stunt was his idea—he thought of it twenty years or more ago. So I'm working off one of mine on *him*." Upham chuckled, happy as an undergraduate. "Only I don't think he's fast enough to unravel mine as quickly as I did his."

General Canby was nonplused. He was confronted with a situation he had not expected.

"Do you mean," he said, aghast, "that while we are fighting for our very existence, you are frittering away your efforts prolonging a silly schoolboy feud? Personal enmity has no place in war!"

"Enmity?" echoed Upham, his mild blue eyes widening in astonishment. "Why, Heine and I are the best of friends. The only trouble with him is he's blind to the possibilities of mutants

in organisms. But he'll know better—soon."

"In the meantime our armies are pushed back every week," said General Canby, bitterly, not knowing quite how to handle this queer technical expert. "When they open the big drive next spring, we're done. And all the while you are playing with rats, to prove some point in a childish squabble!"

"Not rats, lemmings—lemmings from Norway!" Upham turned his absent-minded gaze toward the window. Then his expression became at once alert. He jumped to his feet, excitedly, and ran to the window, shouting.

"Stop him! Stop Okkuk! Head him off before he reaches the shore!"

GENERAL CANBY followed to the window. He could see an Eskimo plunging down the rocky slope, falling occasionally, but each time picking himself up and resuming his headlong flight toward the fjord. He saw him bang blindly into a post, stop and tear at it savagely until he had uprooted it and flung it to one side. Then the fleeing man dashed on to the brink of the fjord and dived into it. Canby could hear Upham's voice behind him, telephoning to the soldiers on the dock. In a moment a boat was putting out, pursuing the fast-swimming Eskimo.

Upham joined General Canby at the window. He pointed down to a trough partly filled with grain. The trough was in one of the empty pens that had held the tawny rats.

"Okkuk is something of a petty thief," Upham explained, "but we should forgive him. He has saved us the embarrassment of having to ask for volunteers. He has evidently stolen and eaten some of my experimental food. Come, I will show you."

General Canby followed Upham through the halls of the laboratory building. He looked into a huge refrigerator piled waist-high with the dank

bodies of the dead little animals. He was shown the pens of the living ones, and glanced through stacks of closely written notebooks. Upham was lecturing as they walked. He talked of hormones, a new and unthought-of variation that only developed in fluctuating and distorted magnetic fields.

He displayed microscopic slides, charts of curves correlating sunspots and auroras with selected terrestrial plagues and migrations. Canby saw the weird, fantastic arrangement of oddly constructed electromagnets suspended in all positions around jars of wheat, baskets of moss, other substances. In an hour's time, he had lost the feeling of annoyance he had brought with him into the building. It had been replaced by a consuming interest. The interest grew into enthusiasm; here was the road to victory, and General Canby found himself slapping the lank colonel on the back and crying.

"You've done it! This is what we have been hoping for!"

THE *Viper* carried a contented Chief of Chemical Warfare back to Europe. His task was to lay this plan before the General Staff and get their cooperation. Colonel Upham wound up his work in the laboratory and departed for Chicago.

The purchasing agents of the Democratic armies had already engaged many millions of bushels of wheat and had contracted for its milling. In that city of abundant power supply, manufacturing facilities, and vast grain storage capacity, it was a fairly simple matter for Upham to have his special electromagnets built, and the ponderous machines rigged at predetermined points about the grain elevators. Some were placed on cribs erected on the roofs, others on tall structures of heavy scaffolding located at carefully computed angles to the sides. When they were all in place, and the cam-driven battery of

rheostats connected, Upham gave the order to let the amperes flow.

The resulting wail of protest from householders whose radios were flooded with strange, oscillating static was dealt with by a friendly city government. Upham stayed in the city, keeping a watchful eye on his power charts, testing samples of flour from time to time as it was milled, and making further studies of its effects. The magnetically mutated hormones were present in every sample, in abundant concentration. His reactions were invariably what he expected. There was no more to be done in America. He let them barrel the flour, and later saw it descend into the hold of ships in New York harbor. Escorted by a squadron of destroyers, he crossed the Atlantic with his shipment and supervised its placing in the warehouses of Le Havre.

General Canby was having a harder row to hoe. First, the General Staff snarled at him, and the War Ministry laughed him out of the room. But he went at them again and again. His winning card—and he knew that they, too, knew it only too well—was that they had no alternative.

Spring was near, and with it would come the last Big Push. All winter they had barely managed to hold their lines, dug in behind barbed-wire, fighting the miserable war of attrition in the mud. Elsewhere on the Continent, one after another of their allies had crumpled, been overrun, utterly crushed. Each such victory made more enemy troops available for the grand final thrust on the western front. As the roads became more passable, the enemy would be concentrating for the drive that would make the word "Democracy" a historical term.

As matters stood, there was left but the desperately held territory of the southwest half of France and a thin strip of the Channel coast protected by a hard-held line from Ostend to Rouen. Thence, the battered, soggy trenches straggled

across France through Orleans toward Lyon. Paris had been lost the year before. The British clung doggedly to the torn and shattered sector of shore opposite their island. It was their last buffer against invasion.

It was when they thought of this bit of mangled territory that the die-hards among the brass-hats snorted indignantly. This Chemical General, Canby, had the effrontery to propose that they deliberately evacuate the lines from Amiens to Rouen and *let* the enemy through! Worse, he was urging them to stock the advance base at Gournay, behind the salient of that name, with thousands of tons of flour newly received at great risk and expense from America, and then abandon it to the enemy. Such tactics were shockingly novel! Outrageous recklessness!

IN TIME, Canby made his point. He argued that they were certain to lose the sector in any case, and pointed out that by orderly withdrawal they would save the troops to strengthen their lines elsewhere. And he finally convinced the most stupid of them that the gift of the flour was like that of the Trojan horse. It was charged with the hormones of destructive madness!

Flour, of all things, was what the enemy needed most. Although they had swept the Continent from one shore almost to the other, their lack of sea power had meant they still suffered an external blockade. During all the war, there had been an acute shortage of foodstuffs, and the civilian population had long since become inured to the use of shoddy substitutes. Such stocks of genuine food as could be obtained—usually by capture—were immediately distributed to the army.

When the General Staff made its decision, they were gracious enough to call in General Canby and allow him to dictate the movement orders.

His preparations were swift and sim-

ple. While the flour Upham had brought from America was being trucked to the depots of Gournay, all the rest of the district of Seine Inferieure was cleared of every living thing—animals as well as the citizens and troops. Prepared flank lines were drawn on the off banks of the Seine and the Somme. When all the region between the front line trenches and the Channel had been evacuated, the thin ranks holding the line were withdrawn during one dark, rainy night.

The enemy continued to bomb and shell the area, but within a few hours a trench raiding party found an abandoned trench. In another day the vanguard of the army was moving in, warily feeling its way ahead with the probing arm of artillery fire. But planes and scouts soon confirmed the fact of general retreat; the district was deserted, empty of defenders.

The general commanding the first wave of the invaders found the unguarded depots of Gournay, and settled his headquarters there. There was much material there besides flour, and hundreds of trucks were soon rolling to the rear, dispersing the welcome booty. Field kitchens all over conquered France would shortly serve to the victorious soldiers food that they had been deprived of for many months.

Fighting went on as usual, for several days. General Canby trotted in and out of General Headquarters, enduring as patiently as he could the biting comments of the Commander-in-Chief. But his aide, Colonel Upham, was content. He knew his hormones and their interval of propagation. Consequently, he walked the streets of Rouen unmindful of the tittering of the French girls or the wisecracks of the fresh young officers who referred to him in the privacy of their messes as "that nutty old billy-goat." His mind was full of anticipation of the humbling of his erstwhile co-worker, Heine Woerlein. In

just a few more hours he could taste his triumph, watch his contemptible "deformed hormones" tumble the reputation of his friendly rival into the dust.

On the third day, the relinquished sector was filled with the foe. He had occupied it to the utmost edge.

Then something extraordinary began to happen. Troop movements began on a huge scale. Those within the sector, the ones who had been attacking the north and south lines hemming it in, ceased their operations and unexpectedly marched away toward the coast. Elsewhere in France, armies began to converge on that region that had so accommodatingly been vacated by the Democratic armies. In response to the only inquiry that Upham made, Canby found out for him, through the Intelligence Service, that the enemy High Command was still located at Paris—including, of course, the general commanding the chemical warfare elements, General H. Woerlein.

"TOO BAD we can't see it all," remarked General Canby to Colonel Upham, the next day. They were lying on the belfry platform of an ancient Rouen church steeple, their binoculars resting on the sill of a slender Gothic window that opened out to the wastes to the north.

Firing had ceased. It was unnecessary now to shoot away ammunition. The enemy was paying no attention to what lay on his flanks, only to what was ahead. And ahead was but the ruined and deserted villages of what had once been the pleasant country of Seine Inferieure. Beyond them lay only the English Channel.

Canby and Upham looked again across the fields to the north. As far as the eye could see, there were columns of gray-clad soldiers—many columns, marching abreast. Among them threaded yet other columns, motor-drawn, lines of trucks, tractors, field-guns, tanks. All—regi-

ments, divisions, whole armies—were marching steadily to the west. Whatever lay in their path, whether shrub, stump, or the crumbling walls of a wrecked town, was seized upon, torn apart and scattered to the winds in blind ferocity. But always onward, seaward, flowed those endless lines of gray men.

All day that procession passed. It was a stupendous, awe-inspiring review of the greatest army the world had ever seen assembled. No matter how many thousands had gone on before, there were yet more thousands to follow at their heels.

In the late afternoon, an aerial parade appeared to complete the spectacle. Overhead, the sky became black with planes, planes that veered neither to the right nor the left. They, too, were going west. And behind, from out the hazy distance of the eastern sky, still other squadrons were coming.

Night brought no cessation of the sounds of the hurrying hordes. The measured tramp of countless feet, the laboring motors of the trucks and tractors, and the unrelenting drone of planes above filled the dark air with the echoes of urgent travel. The bewildered citizenry of Rouen was glad to hear them pass, but wondered dumbly where they were going. To the west lay England, to be sure, but where existed the fleets needful to transport such hosts?

In General Headquarters, General Canby pawed through the communications files. Telegrams from the eastern trenches reported the enemy had withdrawn from the attack, and was moving off to the west. Dispatches from Falmouth, England, stated that a multitude of aircraft were passing that point, flying high, headed straight into the west. Toward dawn, radio reports were received from the Admiralty. These contained the startling information that the head of the columns of planes had passed the south of Ireland, far at sea. Several destroyers there had observed many of

them falling, apparently out of fuel, while many others, still in formation, had plunged into the sea in full-power dives. There had been a search for survivors, but none had been found.

When morning came, Canby and Upham went again to their observation post in the church tower. There were still the relentlessly moving columns to be seen, and they could not but feel appalled at the very magnitude of the forces they had set in operation. As they watched, breathless almost with awe, they noticed a new feature in this day's stampede. Yesterday, the men driving seaward had stopped occasionally, as if for meals or routine rest, but today they did not stop. Seemingly tireless, or as if driven by some urge that brooked no delay and revoked the natural laws of fatigue, they even accelerated their pace.

THE LAST of the airplanes had gone on out over the Atlantic. The sky was clear. General Canby and his aide left their perch, went to the ground, where the general ordered a plane. At the air-base, the grotesque figure of the discoverer of the mystery hormones that had caused this astounding migration of their opponents followed his chubby chief into the waiting plane. They got off the ground and steered a course across the sky above the marching legions, heading toward Dieppe, on the Channel. The hurrying troops and motorcades below were too intent on their strange fixed purpose even to glance upward.

If the sight of the marching armies past Rouen had been uncanny, what was to be seen at the shore line staggered belief. The beach, wherever access could be had to it from the land, was black with men, crossing, striding into the surf. In one place where a road led straight down to the water, a long column of tanks had emerged onto the sand, wallowed across it, and plunged into the waves. The first of them had stalled as soon as their carburetors

flooded, but the succeeding ones crawled clumsily up over them, toppling into the water beyond.

Canby and Upham circled above, watching in amazement. Soon, something very much like a breakwater had been built by the steady accretion of new tanks, flung together in a nondescript pile, some upside down, others at weird angles. Some infantry, following, advanced unhesitatingly into the water until stopped by the irregular wall of steel. They beat viciously at it with rifle butts, or tossed hand grenades. Finding they could neither demolish it nor move it, they wriggled between the crevices or climbed over. By whatever means they could, they forced their way to the other side. Then they struck out into the dirty waters of the Channel, swimming, a few of them, for a few yards, but the weight of their equipment dragged most of them down.

Similar scenes were everywhere along the coast. The seemingly inexhaustible man-power of the enemy was pouring steadily over the sand dunes, charging across the beaches, flinging itself into the ocean.

General Canby viewed the strewn ocean in solemn silence. As night approached and there was yet no end to the advancing regiments bent on watery self-destruction, he turned the plane and headed back toward Rouen. Colonel Upham had seen enough. His theory had borne fruit, abundantly. The war was won, and far more important to him, his thesis was upheld. Somewhere among those ocean-craving throngs was his friend and classmate, Heine Woerlein. His victory would be empty unless his life-long rival should understand and acknowledge it. Until now, their years of competition had been indecisive. He asked Canby what news there was of the location of the opposing High Command.

It was the next forenoon that they found them. His Excellency, the Su-

preme Commander of the Central armies, was marching seaward, surrounded by his staff. Canby's plane alighted gently in a field a little to the right and ahead of them. He and Upham awaited the oncoming general and his circle of high officers, goose-stepping their way forward, glazed eyes fixed on the western horizon. Like men in a trance, they went forward. Among them, Upham finally recognized his old roommate, Heine, belted, be-medalled, and well-nigh concealed by his steel helmet.

UPHAM DARTED amongst the unseeing staff, and grasped Woerlein by the shoulder and shook him violently, but to no avail. Then he slipped from his pocket a syringe he had prepared and deftly shot the injection into the arm of the somnambulistic Heine. After eight more paces, Heine shook himself and the light of recognition came into his eyes.

"My hormones have got you, Heine," said Silvy urgently. "Snap out of it! You are on your way to drown yourself."

The dazed Woerlein was led to the plane of his adversary, while Upham administered shots of his antidote to the Supreme Commander and his most important aides. A half hour later, they were cruising above the water's edge, showing the astonished captive generals what was happening to their armies. Convinced, the vanquished commander-in-chief signed the armistice put before him, and Canby sent out messages ordering the remainder of the flour to be intercepted and destroyed. Later, the victorious troops of the Allied Democracies, armed with tanks of Upham's antidote, were pursuing the ocean-bound cohorts of the Centralists, salvaging as many of them as they could overtake.

General Woerlein, as a distinguished prisoner of war, was paroled to the custody of Colonel Upham. In his quarters at Rouen, Upham told him what

had happened to him.

"I sent you fair warning, Heine," chuckled Upham, his unruly beard wagging up and down as he spoke. "H over H, the hormones conquer Heine! It should teach you to be more respectful to the possibilities of some organisms.

"If you remember my university thesis, you will recall that I was even then speculating as to the causes of the extraordinary migrations of the lemmings of Norway, those little rodents that periodically go in droves to the sea, devouring or destroying everything in their path. As you know—or should know—when they reach the sea they go right on in, by the thousands, all of them, and start swimming straight away from the shore. Of course, they always drown.

"In the course of time, I eliminated most of the possible causes of this phenomenon and came to suspect that there was something in their diet, some accidental variation of it, that produced the disturbance. It was evidently something that occurred periodically, although irregularly.

"Eventually, I narrowed the field of inquiry and proved to my satisfaction that the magnetic fluctuations set up by auroras was what caused these mutations. I took moss, and bark, and the other rubbish they ordinarily feed on, and manipulated them in various magnetic fields. Finally I got a batch that worked. The hormones of madness—those hydrophiliac organisms—appeared in living specimens. It was simple enough after that to induce the same variations in other foods, such as wheat.

"The wheat variants were even more powerful than those in the moss, and according to my computations, strong enough to actuate men. You saw how it did it. I think that proves something or other."

"Yes," admitted Heine Woerlein, sadly, "I think it does!"

"When Dead Frogs Kick—"

by John Davis Buddhue

Men pay attention when something "impossible" happens—but generally, we are perfectly content to "explain" a thing by naming it. In a civilization impossible without metals, we are only beginning to learn why a metal is a metal. And the answer is—it's a gas!

WHEN the dead try to walk, Man pays attention. Short of that sort of occurrence, human beings are apt to be entirely satisfied about a new phenomenon if somebody names it and lets it go at that. But when dead frogs jump, current electricity is noticed.

Even then, naming the new effect "galvanic electricity" was considered an explanation, and explanation enough; at the time. But, discovered at the beginning of a newly born age of inquiry, the effect of electricity was not explained to entire satisfaction by the newly risen breed called "scientists".

"We work with, use and control it, but don't know what it is." The old paradox of electricity—that is no longer true. We do know the why of electricity now. But only recently, in proportion to the length of man's civilization, has it been conceivable that working with and controlling something was *not* knowledge of it. Until Newton understood the First Law of motion—things remain in their state of rest or linear motion unless disturbed by an outside force—it was inconceivable that any one should question an apple's fall. There was a perfectly good name for the idea—falling—so why ask for more? Man loves names. But the names don't ex-

plain things at all, as the breed of men called scientists are gradually making us understand.

There's another word that's been throwing up fog around a startling sort of thing. Once, a man of the New Stone Age happened on a curious boulder, a blackish, lumpy, rounded thing. Stone—particularly unusual stones—were important to this tool-maker. Let us suppose he investigates. After an hour or so he comes to the reluctant conclusion that he can't break this new boulder; the hardest granite and flint rocks break on it. Suppose he were to consciously list the startling properties of this new stuff.

First; it is twice to three times as dense as the hardest material our stone-ager knows. Far heavier, it would make a wonderful, compact ax. Second; it's as hard—or nearly as hard—as the hard stone ax he carries. The stone-ager knows two classes of stuffs—stone, and the life-things like leather, wood and horn. This new stuff is hard as stone. But it has a new, an unheard-of property. Pounded, it yields and takes a new, permanent form without breaking. Stone doesn't do that, and neither does wood, leather or horn.

Being a man, he explains it all, completely and beautifully, by naming it.

He calls the strange class of stuffs "metals", the new and heretofore unheard-of property, "malleability". He's found a meteorite. As yet, we haven't considered one more property unique to this strange class of stuffs. They can be fused without destruction (as the life-stuffs cannot) and recast in other shapes.

The exciting difference—the complete and utter uniqueness—of metals was 4000 years old when science was invented. Scientists were not shocked into noticing this long-forgotten, now long-accustomed difference by incidents such as frog legs that tried to kick.

Yet here is a class of substances, these metals, that possess properties wholly different from all other things. We know more of their unique properties now. They conduct electricity as do no other things. They conduct heat far better. Metals are tough, not brittle. Their strength is immensely greater. *Why should it be?* Why should metals—that peculiar, unique class—be so utterly set apart?

TALK ABOUT working, using, controlling something we know nothing about! Electricity roused that remark because it was new and spectacular in an inquiring age. Men worked, used and to some extent controlled metal for

five thousand years without the foggiest notion of what made it so!

Today, our whole civilization is based on metals. Stone, other natural products, could not for an instant replace them. That alone is a perfect example of the immense gulf that lies between metal and all other substances.

Metal and electricity. Two puzzles that we base a civilization on today. And, curiously, they are one. Electricity gives the key to both, for one of the unique properties of metals is their ability to conduct electricity better than any other substances. Since all matter is now known to be a complex of electrical particles, this unique behavior of metals should offer a clue to their other unique properties.

And, since all metals are elements, it must be a property of atoms, not molecules. (Therein is another peculiarity of metals. If you pour together molten phosphorous and molten sulphur, you do *not* get an alloy. You get an explosion, a compound, and something that definitely can't be compared, even remotely, to an alloy. Yet molten copper and molten manganese metals simply form an alloy. It is atoms, not molecules, we must begin with, then.)

But the unique behavior of metals chemically—that alloying property, for

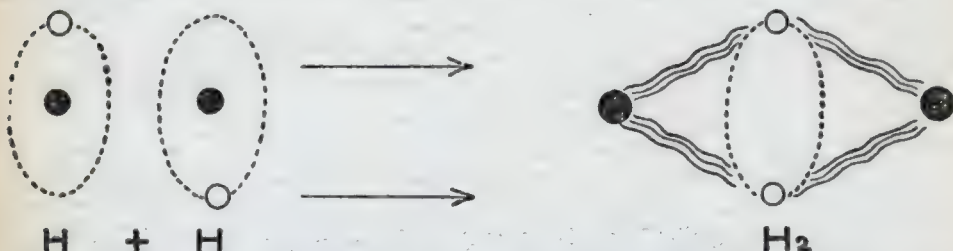


Fig. 1. *Hydrogen unites with hydrogen to form hydrogen molecules that have a balanced pair of electrons. Because these balanced electrons are stable, hydrogen does not display the properties we call "metallic." An indication of the firmness of the bond here is given by the flame produced by this reaction. The atomic hydrogen flame is the hottest known, a flare that reduces platinum to a watery puddle instantly, one that tungsten alone can withstand.*

instance—serves as another clue. Let's start by investigating chemical combination from the atomic structure viewpoint.

We'll begin with the simplest atoms. No. 1 is hydrogen. It has a single proton with one positive charge as the nucleus. One single electron with a single negative charge circles that proton nucleus in an orbit.* Electrically, we have a perfect balance— $+1$ for the nucleus and -1 for the electron. But dynamically, we have a lopsided system—a flywheel with all the weight on one side. The atom, one would think, would have a tendency to certain instabilities.

But No. 2, helium, is better designed. It has a charge of $+2$ on the nucleus and -2 on two orbital electrons. If we picture those two electrons at opposite ends of a diameter of a circular orbit, following one another around the same path, we have an atom that is both electrically and dynamically stable. It should be remembered that helium absolutely will not unite chemically under any known conditions. It is, in fact, exceedingly stable.

Hydrogen isn't. It is never found uncombined under any approximately normal conditions. You cannot prepare free hydrogen atoms in gaseous form by any chemical method. Oh, no, you can't. What you're thinking of is free hydrogen molecules— H_2 . That's easy to prepare—zinc and acid, electrolysis, thermal dissociation of water—a hundred ways. But so unstable is that hydrogen atom that it immediately unites with another hydrogen atom. See what we have then: two nuclei perhaps, but two plus charges circled by two electrons at the opposite ends of a diameter of a common orbit. It isn't a helium atom, but it's the best darned imitation a hydrogen atom can contrive. That system is pretty stable. It's so stable, in

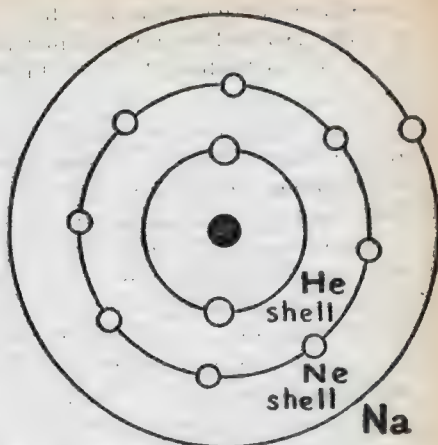


Fig. 2. *The electron-ring structure of Sodium, a typical, though extreme, metal. High conductivity to heat and electricity, great malleability, metallic luster, etc., are all pronounced. That single, outer electron is easily removed, and highly mobile.*

fact, that some 5000° of heat are required to break it down. (In contrast, water begins to break down into those double-hydrogen molecules at a mere 2800° .)

ONLY THE outermost level of the atom is of interest to us here, and it has been found that the most stable configurations have either two or eight electrons in this shell, depending upon the element. Those that do are the chemically inert noble gases such as neon and helium. The other elements are all deficient. Thus sodium has one and chlorine has seven. But sodium has eight electrons in the next to the outermost energy level. Moreover, it is possible for the sodium atom to give its single outermost electron to a chlorine atom, with the result that both atoms now have eight electrons in the outer shell. This is exactly what happens when sodium and chlorine unite to form sodium chloride—common table salt.

* We'll use the Bohr planetary-system atom. Most of the more complex atomic models follow it fairly closely, and a lot of those more complex atoms are fine for X-rays, but very poor chemicals.

However, even atoms never get something for nothing. In satisfying their desire for those certain numbers of electrons, sodium has lost one charge, and chlorine has gained one. They are no longer electrically neutral atoms, they are ions, oppositely charged. And because unlike charges attract, they tend to stick together. This kind of chemical union is the weakest of all. When salt is added to water, or certain other liquids which are, themselves, highly nonconducting, the liquid atoms have the same effect as though the distance between the sodium and chlorine ions had been increased. This weakens the bond still further, and the ions become nearly free. This process of ionization is a characteristic of this kind of chemical bond which has been called an *electrovalent* bond.

Not all molecules are put together in this way. Take the familiar substance water as an example. Each molecule of water is composed of one atom of oxygen with six outermost electrons, and two atoms of hydrogen with one each. Here, the oxygen needs two electrons which the hydrogen can supply, but each hydrogen needs one electron which the oxygen can supply. Consequently each hydrogen atom shares two electrons with the oxygen atom, and both are thus satisfied. No atom has actually gained or lost any electrons, so no ions are formed. Moreover, the pair of shared electrons forms a very strong bond, so that the molecule does not readily fall apart as salt does. This is called a *covalent* bond. (A *coördinate* bond is similar, except that one of the atoms furnishes both of the shared electrons.)

In metals we have another kind of union called a *metallic* bond and it is this that gives rise to electron gas. This bond is similar to the covalent type, except that there are not enough electrons to complete stable groupings by sharing. What electrons there are must serve for more than two atoms.

Metals are characteristically atoms that need to borrow or share a large number of electrons to have that balanced eight-electron outer energy level, or orbit. Sodium, for instance, is a metal. It has, as the diagram shows, but one outer-level electron. Then a total of at least eight sodium atoms would have to get together to have enough shared outer-level electrons to form one eight-electron outer shell. Eight sodium atoms crowded around one shell of electrons is going to produce congestion, and a definite sort of dissatisfaction. It just wouldn't work out right.

But there's another possibility. There is no essential difference between two oppositely charged ions uniting to form a small molecule and a large number of such ions arranging themselves into orderly three-dimensional lines, rows and diagonals to form a crystal which is a single giant molecule. That is, salt dissolved in something like alcohol is NaCl —two ions united. But a salt crystal is not. It is Na_nCl_n —an immense and indefinite number of ions all working together in one molecule of (atomically) vast size.

Then suppose our metallic sodium atoms unite to form one huge crystal-molecule. They all share the electrons amicably enough then, the electrons wandering around in and about and through the rigidly locked arrangement of the atoms. But, while the electrons in a simple molecule like water have definite energy levels, remain rigidly attached to specific atoms, these sodium-crystal electrons don't. They wander from one to another of the atoms, rather in the fashion indicated in the diagram.

IN LEGAL terminology, there's a status a prisoner may have called "the freedom of the jail". Occasionally, I understand, an alimony prisoner is given this status. What it amounts to is that

he can wander freely through the county—but he can't step out of that county. So, our electrons in the metal crystal have "the freedom of the jail". They can wander about—but they can't get out of the crystal.

They act exactly as the individual molecules of a gas confined in a vessel would; they wander freely, at random, within the limits of the crystal lattice of the metal atoms. This, then, is our electron gas. The gas on which all civilization is, today, irrevocably based, a thing more shifting, less stable, than any quicksand!

So far, we have been dealing with, and building up, a theory. A theory is good only if it works. Can we get experimental proof of this theory? Can we devise an experiment that will answer yes or no as to whether this is pure imagination, or a good representation of facts?

If our ideas are sound, we have a rigid, locked arrangement of atoms that cannot move. They are fixed in place relative to each other by powerful electro-static and intermolecular forces. The electrons, on the other hand, are comparatively free to wander. If they act as a gas—they should act as a gas. If we had a confining vessel filled with a gas and a latticework of solid bars, we could spin the vessel at high speed. The immobile bars would remain in place, but the gas, under centrifugal force, would settle toward the outer rim of the spinning tank.

If our idea is right, a disc of metal spinning at high speed should show a concentration of electron gas at the outer rim. That's easy to test for, for a concentration of electrons is a negative charge.

A rapidly spinning metal disc shows a negative charge on its outer rim.

If we made our tank of gas move rapidly, then stopped it suddenly, the inertia of the gas would concentrate it

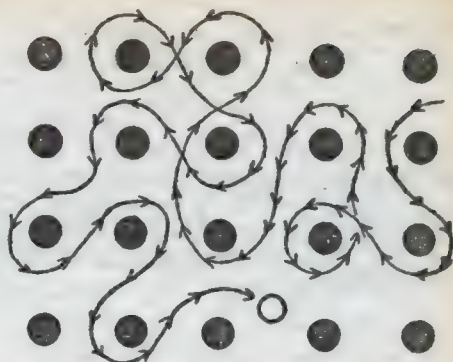


Fig. 3. Possible course of an electron in a metal crystal, wandering freely from the influence of one atom nucleus to the next, rigidly bound within the metal crystal as limits, highly mobile within its boundaries.

at the end of the tank.

An abruptly decelerated metal rod shows a negative charge at one end—the forward end.

Drude (1900) was the first to propose the theory that the characteristic properties of metals were due to these free, or semi-free electrons. His theory is not generally accepted any more, because it is not in agreement with the facts—i. e., it predicts things that are not so. Wein and Grüneisen proposed a better theory in 1913, and Lindemann introduced some new ideas two years later. But the currently accepted theory is based on that of Sommerfield (1927-8).

Sommerfield's theory, which is based on wave-mechanics, assumes that the electron gas is a "degraded" or "degenerate" gas. According to the old classical theory, the graph showing the relationship between the temperature and the energy in a gas is a straight line. This is true even in the wave-mechanics as long as the temperature is high and the pressure low. However, experiment shows that, as required by wave-mechanics, the curve begins to flat-

ten out at very low temperatures, and degeneration is complete when it becomes horizontal. With ordinary gases the temperature at which the curve shows an appreciable departure from classical theory is very low. For helium it is about 5° Absolute, but it should be higher for hydrogen because the temperature rises as the particles of gas become smaller. Now electrons are so much smaller than even hydrogen atoms, that if a man were only as big as a hydrogen atom, he would still not be able to see an electron. Calculation shows that an electron gas would be completely degenerate at $36,000^{\circ}\text{C}$. This temperature is so great that even stars are seldom anywhere near that hot on the surface. (The sun is only 6000°C .)

The theory also requires that the specific heat of the electron gas should be zero. By Pauli's exclusion principle—that if two electrons are close together, they must have very different speeds—some of the electrons in the electron gas must be moving so fast that they are unable to absorb more energy when the metal is heated, and so the metal atoms take up the energy as increased vibration. In other words, the specific heat of the electron gas is zero.

MOST METALS are very compact, and all are opaque, except in very thin layers, and these facts are a real hindrance to a direct attack on the nature of the metallic state. X-rays can tell us how the atoms are arranged into crystals, but of more importance is the fact that many of the light metals, like sodium, and even barium, are soluble in liquid ammonia.

By liquid ammonia I do not mean the solution of ammonia gas in water that your wife puts into the weekly wash. When ammonia gas is made very cold, or put under enough pressure, or both, it becomes a liquid with properties very similar to water.

When some of these light metals—

sodium, potassium—are put into water, they dissolve right enough, and do it with vigor and fervor. But it is not physical solution. It is chemical. Sugar dissolves in water, and can be crystallized out. Sugar also dissolves completely in molten iron, but you'll never recover the sugar. In liquid ammonia, however, sodium and potassium dissolve in a purely physical manner, just as the sugar dissolves in water. They can be recovered, unchanged, by evaporation of the solvent.

Dilute solutions are a vivid blue and transparent. (There is evidence that sodium forms a very transient blue solution with water.) As more metal is dissolved, the solution becomes more opaque, until it has a lustrous copper-red color by reflected light, and looks for all the world like some strange liquid metal. Some metals like calcium form more or less stable ammoniates, similar to hydrates, and these also look just like metals both in the solid and dissolved states. Moreover, both the concentrated solutions, and at least some of the solid ammoniates, have metallic conduction as well as a metallic appearance.

Now it has been experimentally proven that when sodium metal is dissolved in liquid ammonia, it forms sodium ions exactly like those formed when salt is dissolved in water (or liquid ammonia), and also some free electrons. Now since sodium ions have no color, it follows that both the blue color of the dilute solutions, and the copper-red of the concentrated ones, must be connected with the electron gas, and not with the metal atoms. That is, electron gas has a blue color itself.

This is further proven by the fact that the absorption spectrum of all the solutions so far examined are identical. Therefore, the colored substance is the same in all these cases, and the electron gas is the only thing the metals have in common. Finally, some of the metals that are soluble in liquid ammonia, dis-

solve also in methyl amine and other ammonia derivatives, giving blue dilute solutions identical in appearance with the liquid ammonia solutions. When the solubility is great enough, these solutions also assume a metallic appearance. Final proof is given by the fact that it is possible to effect a partial separation of the metal ions from the free electrons, and the metallic properties go with the electrons, not the ions.

When an electric current is passed through a solution of salt in water, the sodium ions are attracted to the negative pole where they pick up one electron and become ordinary sodium atoms. At the same time, the chlorine ions migrate to the other pole where they give up their extra electrons and become ordinary chlorine atoms again. Conduction in a solution of this kind, then, involves actual material transport. The conductivity of the solution depends upon the number of ions, and the speed with which they can move. This speed depends upon their size and mass, the smallest and lightest ones moving fastest.

In liquid ammonia solutions of metals, the conductivity is phenomenally large, because the free electrons are so small and light that they move much faster than even hydrogen ions. In concentrated solutions, the conductivity is almost as good as in the pure metal. Moreover, the manner in which the temperature affects the conductivity is the same as in metals, and not the same as in other solutions. All of this, and more, simply shows that metals, and concentrated solutions of metals, conduct electricity by means of the electron gas, and not by "material" transport. It follows that when current flows through a wire, a gas—electron gas—flows in at one end and out at the other.

The state of the electron gas within the metal is somewhat similar to that of an ordinary gas under enormous pressure. This expectation of the theory is confirmed by the fact that when sodium,

for example, is dissolved in liquid ammonia, the increased volume for a saturated solution is 25% greater than would be expected if there were no pressure. A comparable volume change has never been observed in any other process. The changes in volume and density, with concentration, in liquid ammonia solutions of metals are very different from the behavior of the salts of these metals in the same solvent, and therefore their abnormal behavior must be due to the electron gas.

FURTHER evidence that the electron gas is responsible for the properties of metals, and that these properties are not inherent to the metallic atoms, is to be found in the fact that the vapors of metals, such as mercury for example, do not have metallic properties. Sodium vapor doesn't look very different from iodine vapor, both being violet gases. Mercury vapor is invisible. Both of them, and others as well, conduct an electric current in precisely the same way as hydrogen, neon, and other gases; and that is *not* the way that metals conduct. It is more like the way that a salt solution conducts.

When a metal is greatly "diluted" by dissolving it in liquid ammonia, it conducts as a salt does, not as a metal. It is only in concentrated solutions that metallic conduction and luster appear. Similarly, extremely finely divided metals do not look like metals. Colloidal silver is brown; colloidal gold is blue, purple, or red, depending upon how fine the particles are. Neither has any vestige of metallic luster. Platinum black is incredibly finely divided platinum metal, but looks like only a very black variety of soot. Most metals are gray or black when finely powdered, showing that when the continuity of the electron gas is disturbed, the luster characteristic of metals vanishes.

The crucial test for the theory that

the "metalness" of metals is due to an electron gas, would be to find something that contains no metal atoms, but does contain an electron gas. If this substance also shows metallic properties, then we may regard the theory as proven. Amazing as it may seem, substances with these properties actually exist. As already explained, solutions of metals in liquid ammonia show metallic properties, yet contain little or no real metal, because the metal atoms have been changed into ions, and we know from salt solutions, that contain the same ions, that they have no metallic properties. But we can go even further than that. The ammonium radical and the phosphonium radical, as well as such compounds as $N(CH_3)_4$, will unite with mercury to form amalgams similar to true metal amalgams in every way except that they are comparatively unstable. Such amalgams will displace other metals from their solutions, which mercury alone would not do. Only metals are known to do this. That an electron gas is present is shown by the fact that some of these amalgam forming radicals will dissolve in liquid ammonia forming a blue solution.

In true metals, the conductivity decreases as the temperature rises. This is because the increased vibration of the atoms, causes them to interfere more and more with the electron gas, thus causing a greater resistance to its flow through the metal.

There is a group of substances known as the semi-metals because their chemical and physical properties are intermediate between the true metals and the non-metals. In these the conductivity at first increases with the temperature. But after reaching a maximum it begins to fall again with further increase in heat. To explain the reason for this requires an examination of the crystal structure of the metals and non metals. But, first, a word about superconductivity.

WHEN TRUE METALS are cooled the conductivity increases. When certain metals reach a very low temperature, the resistance suddenly drops to almost zero—they have become superconductive. This simply means that at this temperature the electron gas ceases to behave in a random manner, and is accordingly a nearly perfect conductor.

On the basis of crystal structure there are four classes of elements. The true metals fall into class I, which has three subdivisions. In one of these, part of the metal atoms are arranged so that they are at the corners of an imaginary cube. The rest of them are arranged in the centers of the faces of the cube. This is called face-centered cubic structure. In another subdivision, all the metal atoms are at the corners of imaginary cubes, but are arranged in two interpenetrating systems, so that the corners of one system are at the centers of the cubes of the other system. In other words, there is a metal atom at the center of each cube. This is called body-centered cubic structure. In the last subdivision the atoms are arranged in the most compact possible arrangement—like the piles of cannon balls beside the cannon in the park. This is the close-packed hexagonal structure. The atoms of the first of these have eight close neighbors, the others have twelve.

Class II elements also have these structures but slightly modified. Thus, zinc is close-packed hexagonal, except that the packing is not the closest possible in one direction. Most of these are metals, but some are not. And some depart somewhat from typically metallic behavior. These atoms have four near neighbors.

The semi-metals belong to class III which has several modifications. The gray modification of tin, for example, has its atoms arranged at the corners of a tetrahedron, the structure as a whole being cubic. Diamond also has this type of structure. Here again there

are four near neighbors. In the second subdivision, each atom has only three near neighbors in one plane and some more distant ones above and below it. This greater distance accounts for the ease with which bismuth breaks in certain directions. In the last division of interest to us, the atoms are arranged in long zigzag chains and thus have only two near neighbors.

Class IV contains no metals.

Now it will be observed in the above classes that the more near neighbors there are, the more metallic the elements are. This follows from the fact that a true covalent bond exists only between two atoms. When there are a great many near neighbors to an atom, there are not enough electrons to form simple covalent bonds with all the near neighbors. They must, therefore, do the best they can with what they have, and that is to form an electron gas. As the number of near neighbors is decreased, the bonds become more and more like simple covalent bonds, and the elements are correspondingly less metallic. In class IV and some subdivisions of class III they are all covalent.

One might expect from this, that except for the cubic metals, the conductivity of a single crystal might vary with the direction in which the current flows. Experiment shows that this really is so; the resistance is greatest in the direction with the greatest separation between the atoms. The only reason that some of these elements are metallic at all is because of temporary breakdowns in the "nearly covalent" bonds between the atoms.

This last fact supplies the necessary clue to the abnormal behavior of the semi-metals with regard to conductivity. As the temperature rises, the conductivity of true metals falls; but the conductivity of semi-metals first rises, and then falls. The reasons for the behavior of the true metals has been explained.

In semi-metals, the increased heat causes more violent motion between the atoms, and therefore the breakdowns in the covalent bonds increase, and set free more electrons to carry the current. Hence the conductivity rises. But eventually a temperature is reached when the hindering effect of the vibrating atoms overcomes the increased number of electrons, and the conductivity falls as in the true metals.

IF METALS offer the most resistance to the passage of the electric current in the directions in which the atoms are furthest apart, one might expect that compressing such metals might result in increased conductivity. Experiment shows that it does: Graphite, although not a metal, shows the effect to a greater degree than the metals. The distance between the layers of a graphite crystal is 2.4 times the least distance between the atoms of any one layer. When graphite is compressed, its conductivity is definitely improved, and this fact is utilized in the carbon microphone, where the changes in conductivity caused by a vibrating diaphragm are made to vary the intensity of an electric current.

The fact that iron, and a few other metals and alloys—Heusler's alloys are magnetic but contain no iron, nickel or cobalt—are attracted by a magnet is well known, but it is less well known that some metals, notably bismuth and antimony, are actually repelled by a magnet. This fact can be used to prove the presence of covalent bonds in these and other diamagnetic metals. Experience shows that compounds with covalent bonds are characteristically diamagnetic, consequently diamagnetism is a strong indication of covalent linkages.

The physical properties of metals are also related to the crystal structures described above. Thus the perfect cleavage of graphite is due to the large separation between the layers. The good cleavage of bismuth and antimony has a similar

explanation. Their good cleavage is the cause of their brittleness.

The malleability, ductility, and flexibility of the true metals is due to the fact that their structures permit the formation of planes when the metals are stressed. The atoms are able to slide along these planes, and reestablish the original structure when the stress is removed. The resistance to such sliding accounts in part for the varying degrees of elasticity of the metals, although other factors are involved.

In the matter of alloys, several possibilities may occur when two liquid metals are mixed: (1) they are completely soluble in all proportions; (2) there may be limited solubility; (3) they may be practically insoluble; and (4) they may form one or more intermetallic compounds, more or less soluble in each other, and/or the excess metal.

If they are completely soluble the result is a homogenous solid solution of one metal in the other. Usually, the atoms of one metal simply take up positions in the crystal lattice of the other at random. In a few cases the extra atoms simply fit into the spaces between the other atoms. In either case the extra atoms distort the structure of the solvent metal to some extent. Copper distorts the nickel structure very little and they are completely soluble in all proportions. Arsenic distorts it a great deal, and it has a limited solubility. This distortion reduces the metallicity of the alloy by disturbing the electron gas, and when

compound formation occurs, it also absorbs electrons by forming covalent, or nearly covalent, bonds. This reduction of metallicity shows itself in greater brittleness and increased resistance to heat and electric conduction. In some cases, as little as one foreign atom in 10,000,000 atoms of pure metal will produce a measurable change in the electrical resistance.

Limited solubility means that at some point the distortion becomes so great that no stable configuration is possible, and the mixture separates into two parts. Insolubility, as of gold in lead, is simply an extension of the same principle.

The nature of intermetallic compounds, of which a large number are known, is not yet clearly understood. There is strong evidence, however, that there is a direct relationship between the type of crystal structure of the intermetallic compound, and the ratio of valency electrons to atoms in the molecule. Therefore, the electron gas seems to be of importance here also.

The metallic appearance of such substances as iodine, silicon, graphite and such minerals as galena and pyrite is no doubt due to the same reasons as in the semi-metals—namely, a temporary disruption of covalent, and nearly covalent bonds, with resultant production of some electron gas.

Metals are not the only place that an electron gas exists. Our radio tubes depend upon it, X-rays are produced by it and many other more or less scientific instruments make more or less use of it.

Back issues of Astounding—

are available to a limited extent. Readers who wish to secure them can do so by sending 20c per copy to the Subscription Department. Issues from January, 1935, to date are on hand, but the available copies of the February, 1935, and the June, 1937, issues are few.

The Editor.

THE EINSTEIN INSHOOT

by NELSON S. BOND

Or maybe it was a slow ball. Anyway, "Twister" McCoy had a great pitch. It left his hand—and got to the batter's position about the middle of next week, but just wasn't there in between times!



"Whaddya mean, strike?" yelled Lash. "It wasn't nowheres near the plate—it's just—gone!"

ALL right, so I'm dumb! Quitting baseball just about the time the big leagues were getting ready to pick me up off the Cougars. Well—maybe you're right, but I ain't taking no chances. And neither is "Twister"

McCoy. But if you want to learn the inside stuff on Twister's "fadeaway" that stopped the rest of the league cold last season, pull up closer and I'll tell you—

It all started down in Florida. At the

Cougars' training camp. Me and Twister was slated for the starting battery in a grapefruit league game, and I was warming him up one day.

He was slinging them in smooth and free, just like he always done—showing a nice change of pace and pretty good form for so early in the year. He flung in a few, me giving him the old pepper meanwhile, and then I give him the signal for an inshoot. Twister nodded, rared back, and let it go!

And—that was all! Nothing happened. There I was, all set for the catch—only they wasn't any catch! I lifted up and shook my head at him.

"You oughtn't to never do that, Twister," I yelled. "Don't never balk—not even in practice. It gets you into bad habits."

"Balk?" Twister hollered back. "Balk? What the hell do you mean, balk? I thrun the ball!"

"Stop kidding," I told him. "We got a game of ball to play. Now, come on. The same thing. Let's have it!"

I dropped into my crouch. But Twister had stepped out of the box.

"Wait a minute, Jumbo. I did *so* throw the ball. Where is it?"

You know Twister. A fine guy and a real pal, and not too heavy on the gray matter. He ain't the kind that pulls practical jokes. I straightened up and stared at him.

"You *thrun* the ball?" I repeated. "You absolutely *sure* you thrun it?"

"Hope to lose a one hit game if I didn't!" Twister swore.

I kind of shuddered and tossed him a new ball.

"Look, kid," I told him. "There's something screwy here. Take this and throw up another, exactly like you done last time. Hear me?"

He nodded and went into his wind-up. I got down on my hunkers and watched him close. I could see the ball in his

fingers. He wasn't palming it. I watched it come off his hand, slide about half-way down to the plate, and then—that was all! It wasn't there no more!

I looked at him and he looked at me. "Well, Jumbo?" he said, kind of nervouslike.

"I can't even guess," I said slowly. "Let's go ask old Murph."

MURPHY was bouncing fungoes to a bunch of rookies. He looks less and acts more like a manager than any other guy in organized baseball. Maybe that's because he's been in the game since Connie Mack was a pup. He pulled around and glared at us when we come up.

"Five bucks!" he snapped. "For loafing when I told you to warm up. Now—what do you want?"

We told him. That is, I told him. Twister was standing there looking at his hand like somebody had gone and switched flingers with him overnight. He was holding it away from his body, kind of gingerly.

When I finished, Murph said, "Let me get this straight, Jumbo. You're telling me that Twister threw a ball and it disappeared into thin air?"

"That's right."

He looked me up and down, turning a sort of gray-green color. Then,

"O. K., boys!" he said. "That'll be fifty smackers apiece. I ain't having no drinking in this training camp. You've both been warned——"

"Got a ball, Murph?" said Twister. Murph stared at him for a minute, then handed him one.

"Watch that fence," Twister told him. He hauled off and let one go. You know the rest. It started off his fingers all right. But then, . . .

"It ain't fifty," roared Murph, getting grayer and greener by the second. "It's a *hundred* bucks each! If you two think

you can pull fast ones on an old-timer like——!"

He come around. Hell, he *had* to come around finally. Because no matter how much you argue that the thing was impossible, Twister could do it, see? He didn't know how. He flang them; I caught them. I mean, I *didn't* catch them. Meanwhile, Twister was worrying himself into a fine case of the screaming meemies.

"Where do the damn things go, Jumbo?" he used to ask me a dozen times a day. "I put 'em in there just like I always used to. Well—not exactly the same, now that I think of it. About halfway through, my wrist gives a crazy little twist. And then—bingo!"

"Don't ask me," I told him. "All I know is, you got something there. Something that ought to come in darn handy sometime when we're in a tough spot."

That much was right, anyway. Maybe you remember the first time Twister flang his new fadeaway in a regular league game? It was with the Gray Sox. They had two on base, and "Buster" Lash up at the plate. It was a spot. I got an idea that Twister's funny pitch would fit in here, so I give him the signal.

Twister blinked and tried to shake me off, but I insisted. Finally he sighed, rubbed the ball, stretched and let 'er ride. . . .

"STRIKE!" shouted the ump.

Lash turned and glared at him.

"Whaddya mean—strike?" he snarled. "That ball wasn't nowheres near the plate!"

"Outside corner," said the ump firmly. "O. K., play ball!"

I looked at him kind of sicklike.

"You—you got another ball, ump?" I asked him.

"What's the matter with the one you've got?"

"Nothing," I said, "except that I ain't got one!"

"See!" roared Lash. "I told you! It's a phony!"

"And you're shower-meat," the ump told him, "if you don't shut your big yap. What do you mean, you ain't got no ball, Jumbo?"

"Just that. The ball didn't never reach my glove. It faded at the plate."

"Faded—where? Into what?"

"You tell me," I begged him. "That's what we've been trying to find out ourselves."

By this time both teams had come in to the platter. "Blubber" Mulaski, the Sox outfielder, chipped in his two cents' worth.

"Rule 'em out, ump!" he demanded. "It's some kind of a trick."

"Jumbo," said the man in blue sternly, "I'll give you just five seconds to produce that ball."

"But I can't!" I yelled. I grabbed a ball out of his pocket, tossed it to Twister at the mound. "Show him, Twister!"

I thought the ump's head was going to be too small for his eyes, the way they bugged out. It stopped all the other chatter, too. All except Blubber Mulaski.

"It's an unfair pitch!" he continued to yell. "An illegal pitch. Rule 'em out!"

The ump scratched his head and reached for his rulebook. Unfair? How the hell can a ball be unfair when it reaches the plate? Even if it *does* disappear a split second later?

All right, so it had the umpire stopped. But he wasn't the only one. They even took it to Landis. The other teams, I mean. You can see why they'd want a quick ruling on it.

According to the rules, the ball was fair enough. It was properly pitched, and it come straight to the plate. Only thing, it never crossed the plate! By

the time it got there, it was beginning to fade.

Maybe you seen the moving pictures they took of it? How the ball was round and solid when it left Twister's paw; then started to get sort of pale and thinnish and weak as it traveled. Until it turned to nothing at all, just as it reached the plate? Well—that's what stopped Landis. He took one look at them pictures—then went away for a vacation.

Some professor up at Columbia got interested in it, and come down to make a lot of tests. He like to wore out Twister's arm throwing that inshoot. But finally he come up with the explanation that something called non-you-kid-'em geometry entered into it. Claimed Twister gave the ball a funny twist that shoved it smack into the fourth dimension!

About a thousand other professors come out then and said that such a thing was impossible. They said a guy by the name of Einstein invented the fourth dimension, and no dumb ball player like Twister McCoy could toss a ball into it. Which hurt Twister's feelings, because while he might be kind of dumb, he ain't a dumb ball player. If anybody could throw anything into something else, he was it.

ANYWAY, the newspapermen did a good job of making me and Twister big shots for a while—even if we wasn't popular in the locker-rooms. Chances are we'd be up in the Big Time now, standing DiMaggio and them others on their ears with that inshoot if Twister hadn't started letting a little fame go to his head. . . .

Because that there "fourth dimension" they were talking about is Time, see? What Twister was doing, when you knock the edges off them long words the pros was using, was to toss that there apple right into the middle of next week!

Well, I might as well finish. I was telling you how Twister got swelled-headed and starting grandstanding. It was during the last day of the League Series.

We had already won three straight games, and with Twister pitching this one, it looked like a clean sweep. But before the game, Twister started showing off. There'd been so much talk about him in the papers, that he began to believe it hisself. He'd went and got hisself a carton of brand new baseballs—and autographed them. Made me write *my* John Hancock on 'em, too. You know—the greatest battery of all time? That sort of thing?

Sure, I fell for it. I ain't always smart.

So before the game, when the cash customers began howling for Twister, he motioned to me and we ducked out of the dugout and took a few bows. Then Twister started tossing them balls out to the crowd as souvenirs, like Ruth used to.

He was darned near at the bottom of the carton before I seen what the dope had been doing. They was a lot more noise than they was movement in the grandstand. That was the tipoff. I looked quick.

Twister, being excited, had been heaving all them balls with his trick inshoot! Not a darned one of them had reached the stands! And them costing us seventy-five cents apiece wholesale. . . .

No, I ain't off the subject. It all ties in. We won that game, you remember. Eight to nothing was the score, Twister shut 'em out with only two hits. One in the second inning, and one in the ninth.

But it was the hit in the ninth that was the tipoff.

Yeah—it was a clean hit! Too darned clean—that was the trouble. For here was the trouble. That hit in the ninth come off a ball that *Twister had never thrun!*

CRAZY? No, I ain't crazy. It's the truth. Just as Twister was winding up to lay a pitch in, this ball came to life right smack in front of the platter. Thin at first, then taking on a little body—and finally floating gentle and firm right down the middle of the old alley. No wonder Thompson got ahoft of it for a two-bagger.

Meanwhile, Twister stood in the box with a silly look on his face—still holding the *real* ball in his hand!

That was the tipoff. After that game, Twister and me talked it over serious. That's why we're not playing baseball any more. Let the big leagues yell for us. We aren't having any, thank you. And why?

Hell, there's nothing mysterious about it. That Columbia professor was one hundred percent right. Twister had been flinging them balls into the fourth dimension—the Time dimension. Only he hadn't been throwing them far

enough. About the middle of this season, I figure them balls is going to start coming back in wagonloads. All Twister would have to do is cock his arm, and a ball would come floating over the platter. If he was in the big leagues next year, he'd have an earned run average higher than the Empire State Building!

WHAT'S that? My part in it? Say—don't you remember that carton of balls Twister heaved into the grandstands? Well, some afternoon this year there's going to be about a hundred guys and gals get suddenly konked on the knob with balls that appear out of thin air.

There's going to be one helluva lot of injuries—and just as many lawsuits. And me and Twister don't want to be within reaching distance when them Einstein inshoots start raining all over the lot. Them balls, brother, has our signatures on 'em!

Statement of the Ownership, Management, etc., required by the Acts of Congress of August 24, 1912, and March 3, 1933, of Astounding Science-Fiction, published monthly, at New York, N. Y., for October 1, 1938.

State of New York, County of New York (ss.)

Before me, a Notary Public, in and for the State and county aforesaid, personally appeared H. W. Ralston, who, having been duly sworn according to law, deposes and says that he is Vice President of Street & Smith Publications, Inc., publishers of Astounding Science-Fiction, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: *Publishers*, Street & Smith Publications, Inc., 79-89 Seventh Avenue, New York, N. Y.; *editor*, John Campbell, 79 Seventh Avenue, New York, N. Y.; *managing editors*, Street & Smith Publications, Inc., 79-89 Seventh Avenue, New York, N. Y.; *business managers*, Street & Smith Publications, Inc., 79-89 Seventh Avenue, New York, N. Y.

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Of Street & Smith Publications, Inc., publishers.

Sworn to and subscribed before me this 30th day of September, 1938. De Witt C. Van Valkenburg, Notary Public No. 24, New York County. (My commission expires March 30, 1940.)

Ross Rocklynnne

describes what happened when the world woke up one morning to find the critics raving over the greatest magician of all time. Columns, pages of articles about him. And no one—not even the critics—could remember having seen him! No one could answer the mystery—

“WHO WAS DILMO DENI?”

Extract from *The North Ridge Sentinel*:

WHO WAS DILMO DENI?

By Harry K. Wilson.

Who was Dilmo Deni?

Back issues of countless newspapers indicate that less than a week ago he was a magician who drew vast crowds. Billboards along the highways proclaimed his greatness. Theater critics wrote fabulous tales of his magical prowess. He was the especial rave of New York City. Yet——

No one remembers him. No one remembers seeing, hearing, talking, reading, writing, or thinking about him. Not even the critics who devoted whole columns to his praise. Nor the booking agent whose records show first discovery of the man.

There is the tale of the theater manager who almost went insane when he discovered a full house expectantly waiting for a show which he had apparently forgotten to arrange for. Yet——

Outside that very theater Dilmo Deni was billed for appearance that very night!

Who was Dilmo Deni?

Yesterday a man, dressed in the rough garments of a woodsman, entered this

office. *He said he knew.*

Is this question and answer interview, herewith published, the answer to that terrifying question? I think it is! Read it! *The North Ridge Sentinel* scoops the world!

Question: Under what circumstances did you first meet Dilmo Deni, Mr. Judkins?

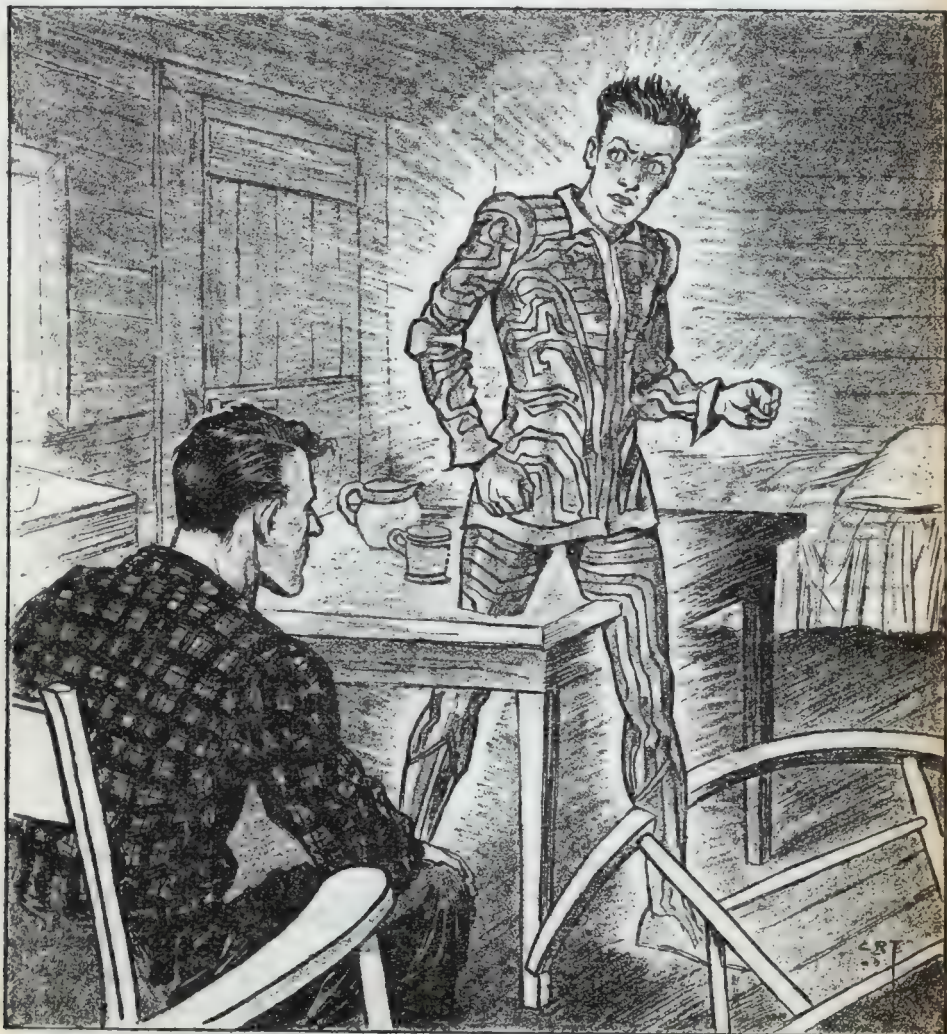
Answer: Well, I have a cabin about eight miles east of North Ridge here. I live there the year around, an' in the winter I trap. But the rest of the time I take things easy. Oncet in a while I come into North Ridge, an' stock up on grub, an' have a good time, but in the main I stick close to the cabin.

About two months ago I was sittin' in the cabin, an' the wind was soft in the junipers, an' I could just hear Little Nagawatchree murmuring like it always does when the spring thaw comes on, an' I was playin' my guitar. I mention these sounds just to let you understand that they was all drowned out by the sounds Dilmo Deni's ship made cuttin' through the air toward my camp. It was a whinin' an' roarin' an' a series of explosions all in one. An' when I

heard this sound, I dropped my guitar an' hurried out into the open. I strained my eyes, an' saw a tiny dot in the sky which quickly got bigger, an' then I saw it was a round ship of some kind, flames streaking out behind it. It passed overhead at uncommon speed, an' all the sounds it was makin' became nothin' but a high-pitched screamin'. It was then hid from my view by a grove of trees, an' a wind swirled up an' blew my hat away.

Then I heard a sound which sounded like a giant slappin' a lake, and I knew then the strange-lookin' ship had struck in White's Lake, where Big an' Little Nagawatchee empties.

OF COURSE, I'm curious, and I saddle Bessie, and we hit off for White's Lake, makin' it in about an hour. When I get there, the sun is just settin', and throwin' some beautiful colors across the lake. There is this Dilmo Deni, standin'



"It isn't there, so far as I'm concerned," Deni explained. "I have put it out of my mind—so it isn't."

on the edge of the lake, and lookin' across at the colors, too, or mebbe he is thinkin' about his ship which has sunk into the lake. He certainly looked wonderful, standin' there with his back to me, as his suit was made of some kind of gold braid, which I dunno as I've ever seen before. The colors the sun was throwin' hit this suit and little misty flames of fire seemed to be surroundin' him, sendin' a eerie feelin' along my skin. But I'm not especially superstitious, so I didn't turn tail, but kept right on comin'.

This Dilmo Deni heard my beast approachin', and he turned, and stood lookin' at me. I stopped Bessie hardly without knowin' it, as the look he had on his face was astonishin'. I don't know how to describe this look, except to say that it was one of those queer looks which highly intelligent fellows wear for one reason an' another, and which seem to ask, "An' who are you, an' why are you lookin' so important, an' why are you here, an' as far as that goes, why am I here?"

But he says nothing at all then, and I get down off of Bessie, and hold my hand out friendly, but he doesn't shake. So I drop my hand and ask him if that was his ship I saw, and if he was hurt, but he says nothing, only his face gets a little sourer.

He was a strange, handsome fellow, was Dilmo Deni, as he was dressed in this gold-braid suit that fitted him tight, and his eyes was yellow. Peculiar eyes they was, like a cat's, an' they glowed. He just kept lookin' at me with those eyes, an' I guess now he was tired, or dazed, or sad, as I asked him several questions before he spoke, and then he shook his head abrupt as if in anger, and said somethin' in a language I do not know.

He motions with his hand, his face becomin' angry, as if he is talking to somebody inferior, and I think I came back with some rough words myself. Finally

he laughed out loud, and clapped me on the back, and then jumped to the back of Bessie, which reared a little, and champed on her bit. But he petted her, and spoke soothin', an' she quieted down.

I was still mad. I started to git up behind him, but he made a motion which said I should go ahead leadin' the beast, an' when I tried to git on Bessie again, he pushed me away, an' his eyes almost spit fire.

Now as you can see, I am a big man, an' I am not afeered of anybody, but I am human an' curious, so I thought this was the time to throw my pride away an' do as he asked. So I took the reins an' led Bessie back to the cabin, an' this Dilmo Deni sat on the mare, an' acted like a king, his face stiff an' never smilin'.

I kept my temper to myself, an' it's considerable, but I was fumin' inside when we crossed the bridge that crosses Little Nagawatchee, an' it was night when I put Bessie to oats and led Dilmo Deni into my cabin.

MY PLACE is jus' a two-room affair an' fixed up very plain. It don't boast very good furniture, in fact everything has been made by my own hand. So I have a single table, an' a rockin' chair, two straight chairs, an' a bed with only room for one, but all the same it is home. But Dilmo walks in an' looks around, an' his face becomes ugly. He talks mean, like a king, but I am no lamb, so I talk back hot to him. At this he seems to grow sorry, and finally he sits down in the rockin' chair. He begins to rock back an' forth, an' presently he is laughin'. In this way I leave him, an' I fix what I suppose is a very fine meal of bacon an' eggs. The eggs are a fine yellow, the bacon is just crisp enough, an' the coffee is steamin'. I draw up a chair an' point to it. He sits down an' I pitch in, as I always say that the Lord helps them that helps themselves.

Now what I tell you here, you must believe, Mr. Wilson, for if you don't believe this you won't believe the rest of this story. It is when Dilmo puts a piece of bacon in his mouth and chews it with much thoughtfulness. His handsome face gets a little green, suddenly, and he quivers a little. He spits the bacon out, an' jumps to his feet coughin'. His chair falls over, and he stumbles over it backward, landin' hard on the floor. He then becomes angry, an' simply turns his yellow blazing eyes on the chair, and then treats it as if it isn't there anymore, an' that part is the truth. It is not there anymore as far as he's concerned. I am sure of this when he takes another chair, an' drags it *right through* the one he looked at! Then he sits down an' begins to eat again as if nothin' has happened, exceptin' that he don't touch the bacon, an' I learn later that he don't think it is civilized to eat meat.

The meal then goes all right, exceptin' that I sit through it a little scared, but as I am sure there is always logical explanations to everything, I throw it off of my chest. An' as nothin' of importance happened after we ate, I will simply say that I slept comfortable, except that Dilmo insisted on sleepin' in the bed, an' I had to use the floor.

In the mornin' I git up an' shake the ground chill out of my bones. I see Dilmo is already up, and that he is pleased with everything. So we eat like friends, an' after eatin', he takes a book out from under the table, an' he blows the thick dust off. He motions me that I should read to him. I start off an' read to him so long my throat gets hoarse. It is noon before he waves his hand. I lay the book down an' he opens his lips an' I am surprised when he speaks real good English right off like this:

"I thank you in the extremity for your kindness," he says. "Of course, it seems to you perhaps that I have not returned

this kindness very well. But I am laborin' under a strain these past weeks, an' I shall certainly try to keep my temper from gittin' the best of me in the hereafter."

But as I am unable to speak, he goes on.

"DO NOT BELIEVE for a moment that I have known your language all this time. I was not aware of how to speak it until you politely read to me passages from this book. I belong to a race of people which has the ability to learn a language just by listenin' to somebody talk it. Our minds are so made that they are quickly able to find possible meanings for words, an' then we check later when we hear the same word used with different other words around it. So it is not long after you start readin' to me that I know many words. It is then easy to discover the meanings of other words, an' soon the language is known to me."

Question: Just a moment, if you don't mind, Mr. Judkins. Are you sure that is the way Dilmo Deni learned to speak English? Is that the way he explained it to you?

Answer: I'm pretty sure he didn't know English before I read that book to him, but of course he didn't use the exact words I used. As I have a good memory, though, an' a fair amount of common sense, I remember that that is the way he says he learned English.

Question: Thanks. That doesn't sound at all impossible, Mr. Judkins. Go right ahead.

Answer: Well, Dilmo Deni went on to say that he came from a place named Ganymede, Jupiter. Now I looked on the map, supposing that Jupiter was one of those little countries——

Question: Excuse me again. Ganymede is a satellite of the planet Jupiter. That ties in pretty well with the fan-

tastic nature of Dilmo Deni's disappearance, as you describe it.

Answer: Well, I wouldn't know about that, Mr. Wilson, but Dilmo Deni goes on, an' he tells me that he was forced into an exile from Ganymede because he tried to make people stop throwin' things out of their mind whenever they became sore at anybody or anything.

"Things was quite terrible," he says. "If I was walkin' down a street it is an even chance that if we meet somebody else my companion should know, he doesn't know him or remember him at all, because sometime in the past he had gotten sore at him over something, and simply thrown him out of his whole universe."

You see, Mr. Wilson, Dilmo Deni says that the whole universe, all those stars an' everything, are just in a man's mind, and his people was gifted in such a way that they could just—expel things out of their minds. He said the universe was mental, an' of course, this sounds impossible, but when you hear the rest of my story, you will think the universe is mental, too.

So Dilmo goes on to say that he tried to stop the people on Ganymede from doing this expelling, but it doesn't work, so they send him away and he lands here. He says he is glad he landed here, for the people here, he says, do not have this wonderful gift.

"But," he ends sadly, "I am afeared that my terrible temper will drop me into the same pitfall I do not want my people to drop into."

AND WITH that, he gets up an' sighs, an' goes from my cabin with his head bowed, and he does not return for many hours. I am dazed by this which he has told me, an' it seems unlogical, but I admit to myself that that explains why he is able to drag the rockin' chair through this other chair. It is

because the first chair does not exist for him anymore at all.

Now Dilmo Deni stayed with me at my camp for many weeks, an' at the end of this time, he was in a real fix. He has a bad temper which he cannot control, an' I hesitate to tell you the things which happened on account of it. But since you must know the rest of the story afore you can believe the rest of it, I'll tell you what happened.

One day Dilmo comes in an' trips over the rocker, upsettin' it an' him, too. He looks at it with his fiery yellow eyes, an' then loses interest in it. A few days later he sits in the only chair left in his mind, an' begins to read, an' since it has a bad leg, it crashes, an' he falls with a loud noise. An' so that chair goes too, figurin' from the look Dilmo gives it.

Dilmo then sits on the bed an' reads, for it is now the only place he can sit, but it is not many days afore I see that the bed has gone, too, for a feather had come through an' stuck him. Secretly, I was glad of this, an' I laughed to myself at the way Dilmo got up stiff an' sore every mornin' from sleepin' on the floor, while I used the bed.

Then Dilmo had to eat off the floor, as he had lost his ornery temper at the way his knees wouldn't go under the table. An' now he went around all day bein' very unpleasant, an' as he couldn't find any more books he wanted to read, the whole pile of books went, an' after that he lost his temper altogether, an' he destroyed everything exceptin' the four walls of the cabin.

You should have seen him, Mr. Wilson, walking 'round an' 'round the room an' through chairs, and the bed, an' the table, an' other small sundries, just as if they wasn't there, an' of course they wasn't, to him. You should have seen him—he'd walk toward the table, an' when you thought sure it would touch him, his leg would just keep on going, an' the rest of his body would disappear,

an' just his torso would be above the top of the table, like a freak.

Now I am not an unsympathetic person at all, but the sight of Dilmo walkin' 'round an' 'round, with nothin' to sit on, an' nothin' to look at or read, was very funny, an' oncet he caught me laughin' an' all the muscles of his handsome face tightens up, and his yellow eyes blazed. I was certain he was goin' to destroy me, too, but of course he does not.

He laughs ugly-like, instead, an' he sits down on the floor cross-legged, in the same spot where the rocker is, an' I can see the whole rocker, but wherever a part of the rocker is I can't see his body there! But as I am used to this, I don't pay it no attention, but I take a chair an' sit down. I look at him real mean.

HE GLARES back at me in a sullen way, an' then I say, waggin' my finger at him, "Now listen here, Dilmo," I say, "this thing has gone far enough. I have gone an' gave you all the comforts of home, an' I have given you a bed to sleep on, an' books to read, an' really all the things that a reasonable man expects from life, an' what have you went an' done? Why, you have went an' deliberately deprived yourself of these luxuries of life, an' now you are in a fine fix, all because you have an ornery temper," an' I let this sink in. He only snarls at me, so that I go on in this manner, louder than he is snarlin'.

"Now, Dilmo," I say, real mean, "I have been a real friend to you, an' think it is only right that you should tell me about all these things that you do, what this puttin' things out of your mind has to do with you bein' unable to read or anything. For instance, how can you put a chair out of your mind, when it is made up of wood an' things which I can touch with my hand, an' see that it is there?"

"It is not there," he says, "if you

have enough power in your mentality to know it is not there," an' then he laughs, an' I can see his mood has changed, an' so I listen with both ears wide open. But I am sorry to say that, although at the time he tells it to me, I think I understand pretty well, I find that I don't understand at all, now. Exceptin' that I remember he says a point is immeasurable, or that it has not got a width, or length, or thickness, an' that a line is made out the most number of points you can think——

Question: Pardon me, Mr. Judkins. Perhaps I can help you there. Did he say that a line is *generated* by a point, that a line is thus composed of an *infinite* number of points?

Answer: That's it exactly, Mr. Wilson. An' he proved that a cubed piece of substance was made of points.

Question: Oh, I'm beginning to get it. Dilmo Deni's argument here was that a point is imaginary, that a point generates a line, and is composed of points; that a line generates a plane, which is composed of an infinite number of points; that a plane generates a cube, and thus the cube is composed of points—and, by axiom seven, the whole is equal to the sum of its parts, a cube is therefore imaginary, since every tiniest part of it was imaginary.

Answer: That sounds like about what he said. When he told me that, I was at a loss for something to say, an' I also had a look of doubt on my face, an' Dilmo laughs again. He goes on in this manner.

"Now, Pop," he says, "I can see you don't believe me, so what is left but for me to show you that the universe is in a minus condition. Let's take an ordinary square which is 2 inches by 2 inches. It has an area of 4 square inches——"

But I stop him here, an' he explains to me many things about arithmetic that I never dreamed of before. Fifteen is the minus part, which is hard to understand, but I finally see that there can be what is known as a minus quantity, as in the case when I owe two dollars, then I have a quantity which is called $-\$2$. So when I have this in my head, he continues, though to this day I cannot understand how you can multiply two debts, an' be left with no money owing at all. In fact, you've got twice what you owe if you owe two dollars.

"NOW," he goes on, "this square, or plane, has an area of 4 square inches. But you can give this plane an area of 4 square inches by givin' it measurements of -2 inches by -2 inches instead of $+2$ inches by $+2$ inches. Minus times minus makes plus. So, by takin' an infinite amount of these minus planes, an' stackin' them on top of each other so they make a cube, each side is -2 . -2 by -2 by -2 makes -8 , an' so this cube hasn't got the 8 cubic inches it ought to have if it exists at all," an' with this he laughs an' uncrosses his legs, an' gets up.*

He begins to walk around the room, an' it is while he is doin' this that the fix he is in comes back to him an' he broods over it. I feel sorry for him, an' see that something must be done to take him out of this unhappy mood. I leap to my feet, an' while I'm pacin' the floor, an idea hits me hard, an' as a great many people have told me I haven't got much imagination to speak of, I am proud of the idea.

* At this point in "Pop" Judkins' story I was almost tempted to believe there wasn't the least hope of his explaining the strange disappearance of Dilmo Deni. But if the story is true, and I am convinced that it is, then Dilmo must certainly have been aware of the fallaciousness of the above arguments. I think he must have been having a little fun at Judkins' expense. The following definition of geometry shows the flaw I allude to: "Geometry, the science of space, discusses and investigates the properties of definite portions of space under the fourfold division of lines, angles, surfaces, and volumes, without regard to any physical properties which they may have."
H. K. W.

So I say, speakin' very excitable, so that Dilmo regards me with some surprise, "Dilmo," I say, "you know I am very sorry for you. I have noticed you are bored, an' tired of life, an' lonesome. As I am fond of you, I am goin' to give up my little home where I have lived so long. I am goin' to take you to New York City. There I will show you how we can make great sums of money." An' when he asks me how, I tell him that the most valuable things in the world is those of which only one can be found. I tell him that he is one of these things.

Now I am not mistaken at all in the intelligence of Dilmo Deni, for he becomes very excited over the idea. So in the morning I dress Dilmo in some of my old clothes, an' we go to North Ridge, where I sell his gold suit. We then go to New York by the fastest train there is.

THERE'S NO use tellin' you all the things that happened when we got to New York, Mr. Wilson, but I will have to admit that we was awed by the big buildings an' the lights which never go out. We go walkin' down the streets pretty much in a daze. Several times we narrowly escape with our lives, as there are so many autos an' cars an' people runnin' around, that it is dangerous if you do not hurry as fast as they do.

But by inquiren' here an' there, Mr. Wilson, I finally found the person I was lookin' for, who I learned was called a bookin' agent. In front of this man, Dilmo walks through chairs, an' puts his fingers through electric light bulbs. I throw a knife at him, the knife goin' through him.

This bookin' agent then begins to blubber in this manner: "Dilmo Deni, the second Houdini," an' he says this over an' over, until I think he is dazed at what he thinks is a great discovery. He thinks that Dilmo Deni is a master of magic.

So he becomes excited. He calls a great many people. In less than a half an hour, a man dressed pretty flashy, an' with an important look on his fat face, is standin' before us. We shake hands with him, after which he says to me, "We can use your magician." He names a price which is five hundred a week. I say "no" to this. I tell him that we will take a thousand dollars for the first week, an' later we will work for the highest bidder, an' I almost drop over when he agrees to this right away.

We then are taken to a hotel. This bookin' agent has seen that we are penniless, an' he gives us a stake until our first wages is paid. We then go over contracts, an' we agree to give this bookin' agent ten per cent of what we make, until we think that we can find another bookin' agent who can find better wages for us. I see now that we are great people, an' I do not mind actin' haughty.

Now I don't want to use up all your time tellin' you about when Dilmo made his first appearance on the stage as a magician, Mr. Wilson, as I guess you have read about that in old newspapers. I'll simply say that from the very first he is what is known as big box-office. There are many people in New York City, an' they all wish to see Dilmo, an' they are willin' to pay large sums to get seats. The very first night he is known as a sensation and a knockout. He takes three encores an' sixteen bows, an' he could have taken more, but our bookin' agent says no to this, for it is bad policy.

Before I come to the part of the story which explains why Dilmo disappeared, I want to tell you that Dilmo became what is known as lionized in the upper register, which, when translated, simply means that he was invited here an' there, an' given meals free, an' that he had to make at least one speech a day. An' I may as well admit that the whole setup is all right with Dilmo, for mixed up with this lionizing there are many beau-

tiful women who chase him. I notice that this is 'specially true when we have been in show business two weeks, an' are now gittin' fifteen thousand dollars a week.

I THINK THAT Dilmo is happy, then. I think that he is pleased with his new life, but one mornin' he comes home late to the hotel where we stay, an' I am busy fixing him so's he can stand straight, when I notice that he is melancholy.

I then ask of him, "Dilmo," I ask, "why is it that you are melancholy?"

To which he replies in this manner: "Pop," he says, "it is all on account of the beautiful young orphans there are in New York City, an' also the young ladies who have invalid mothers which they must support. I feel sad because of them. Exceptin' for one young lady who could not pay the last installment due on her new Lincoln, all were orphans or else had invalid mothers. Needless to say, I have helped them by givin' them quantities of this money which I am makin', an' most of them I have not seen since."

"Dilmo," I say, "you are a kind man," an' I mean this for I myself am sympathetic, an' this is 'specially true with orphans. But I remember thinkin' at the time that it was funny that so many orphaned girls should all run into Dilmo. Later I learn that they are not orphans at all. I find this out when Dilmo comes home one mornin' walkin' very straight, an' I see that he is sober, but that he is melancholy anyway. This turns out to be the great melancholy that never leaves him. He tells me he is very blue, an' that he don't wish to live anymore. He says he is goin' to make plans for killin' hisself. I find that this is because he has fallen in love.

I am very angry, an' I accuse him of fallin' in love with one of these here orphans, an' at this he grows black in the face. I think he is goin' to leap upon

me in a fury, but he does not.

He drops down into a chair, an' he speaks in this manner, pretty blue: "I have learned," he says, "that the orphans who I have been meetin' are not orphans at all. They are known here in New York City as gold-diggers. I became aware of this fact because of a girl who calls herself a torch singer. I met her at a place which many of these gold-diggers told me was a hot-spot. The torch singer sang in a queer, wailing voice, the like of which I have never heard afore. But it affected me in a peculiar way. I thought that it would be better to talk with her than merely to look upon her from a distance. As soon as it proved fittin', I called her to my table, an' spoke with her.

"I first inquired if she also were an orphan. To this she replied 'no'. I then insisted that she must be supportin' an invalid mother, to which she also says 'no'. At this I am puzzled, an' then I am very embarrassed when I tell her that most of the young ladies which I meet is one or the other. She then laughs wildly, an' informs me I have been sponged on by gold-diggers.

"But she seats herself, an' we speak in a friendly manner, until she says suddenly, 'I'm on.' This means she is due on the floor again, so she hurries away, an' sings what is known as a blues number. However, the upshot of this is that I see very much of her in the next week. I discover that she is in great want, but her pride don't let her take money from a man. I also fall in love with her. But now I will not see her again," he ends up sadly, "for she tells me she loves another."

An' then I think he has put her out of his mental world, but of course this can't be done, Mr. Wilson, as then he could not remember her, or she him, either.

"I could not expel her," Dilmo says, his face hopeless, "for I see now that love is a peculiar thing. One would

rather go through the torture of love than to forget the loved one entirely."

I ARGUE with him, an' say that he must forgit this torch singer, but it is all wasted. He shakes his head bitterly, an' mutters something about havin' used up all the happenin's on two worlds, an' that there is nothin' left for him. So he goes to bed, an' it is not until an hour afore the next show that we wakes up, an' he is wearin' that funny smile which I spoke about earlier. I shiver, an' I am scared in my bones, for I know something terrible is goin' to happen.

So that night there is five thousand people who are watchin' Dilmo as he does his magic. They see him leap into a tank of water, an' emerge not wet. He walks through partitions which has been set on the stage, an' which people has tested an' seen is very solid an' unbreakable. Four men throw knives at him, an' hatchets, an' swords, an' large weights, but these seem to go right through him, but it is simply that Dilmo has expelled them out of his mental world. This is also true when men shoot at him faster'n lightnin' with .45s, an' when he emerges free from chains that has been wound tight around him, an' also when he emerges free from an iron box which has been locked with him inside of it.

But it is the big moment of the show when two large blocks of heavy metal are rolled on wheels from opposite sides of the stage toward Dilmo. They are rolled toward each other very swift. Dilmo is standin' there with a cigarette smokin' in his hand, an' he is between the blocks with this cigarette when they meet with a loud crash that makes the whole theater tremble. A low moanin' comes from the audience, an' they are sorry for Dilmo. An' I am sorry, too, for I think that Dilmo has not expelled these two blocks of metal from his mind, as he wishes to die. But when the blocks are drawn away, Dilmo is still

standing' there, an' he is still smokin' his cigarette, an' that is to prove that he has not moved in any way.

Now he takes seven encores, an' after that four bows, an' it is after the fourth bow that he stands there until the clappin' an' noise dies out, an' speaks in such a manner that there is not a sound exceptin' his voice.

"LADIES an' gentlemen," he says, speakin' slow, roamin' with his eyes across the audience, "my performances here in your great city have been most amazin' to all of you. I know that you think I am a master of magic or that I just hypnotize you. I want to say that I am none of these. What you see on this stage is exactly as you see it, an' there are no tricks attached to it.

"I am tellin' you this, ladies an' gentlemen, because tonight is my last performance," an' at this there is whisperin', which Dilmo quiets by raising his hand. "Up to now, my friends, I have amazed you, an' made you all wonder-struck, but I have never told you I am a magician. I am not a magician. I am just unlucky enough to belong to a race of people who have minds so strong that whenever they want to they can expel things out of their mental world.

"Now tonight I am goin' to explain the how-come of all these things that I do. I am goin' to start off by askin' you a question, an' this question is, Can there be a result that hasn't got a cause?"

The audience thinks this over for some time, an' finally they murmur, an' this murmur may be translated as "no."

"All right," says Dilmo, "you will remember that later. Now I want to deal with the Whys an' the Because. The Whys are always questions, an' the Because. I ask of you, Why is this so? An' you say, Because this is so. An' I ask, An' why is that so? You answer with another Because, an' then I come right back at

you with another Why. We keep this up for a short time, an' soon we work down to a place where you cannot answer my last Why. Perhaps you have told me what the smallest piece of matter——"

Question: Excuse me, Mr. Judkins, was the word that he used at this point *electron*?

Answer: That's it exactly. He went on to say that mebbe someone had told him what an electron was in a general way, but when he says Why to them, they are unable to answer. So he says that he will imagine he is askin' his Whys of some superior person who can go even lower than the electron, an' who in fact can keep on givin'. Because. to his Whys until they come to a place called infinity, at which place even the superior person cannot give a Because for the last Why. Dilmo says that when you come to infinity, time, an' space an' all things reach their limits, an' that you cannot give a Because for the last Why, which is the same as having a result without a cause.

"An' as we have gone right to the bottom of everything with these questions an' answers," Dilmo goes on, "the whole universe is built on top of this result without a cause. In fact, the whole universe is a result that was not caused by anything. An' as we have agreed that there cannot be a result without a cause, we have also agreed that there can be no universe."*

SOMEONE starts to titter at this, an' I do not blame them, for it is hard to swallow. But he quiets them an' says sadly, "Do not laugh, I am ready

* Dilmo Deni's argument here cannot be proved fallacious. It is as reasonable, and perhaps more so, than the complex theorizations of well-known scientists. Its apparent absurdity arises from the simplicity with which it is stated. Dilmo Deni says, in brief, that there can be no First Absolute Axiom—that is, a single basic principle with which all known and unknown laws harmonize, from which all known and unknown laws may be deduced, which self-sufficiently explains itself, which is its own cause for its own existence. H. K. W.

to prove these things I have told you. I will show you that the universe exists only in the mind, that I am in your mind, that you are in my mind, that everybody an' the universe is in your minds separately, that therefore all minds, yours an' mine, an' the minds of everybody else in the universe, cancel each other out so that they make nothing at all."

An' they are polite again, but I am shakin', for I see that something terrible is about to happen. But I know it is too late, now, to stop Dilmo, for I can see that he had made up his mind, an' that he is goin' to do away with hisself.

He goes on talkin' again, speakin' quiet an' sad: "Yes, ladies an' gentlemen, I can prove this to you, but I am very sorry to say that you will not remember that I have proven anything to you. You will not remember me," he says. "You will not remember seein' me or hearin' me, or readin' about me, an' you won't remember even thinkin' about me. An' I will not remember you either."

At this point, Mr. Wilson, he turns an' catches my eyes where I am standin' in the wings, an' his look tells me plain as day that he will not expel me, which means that him an' me will remember each other, an' that is the reason I am able to tell you this story.

"I will do this," says Dilmo, "by expellin' the whole Earth out of my mental world. When I do this I shall not weigh anything anymore, an' so the Earth will go away from under me, an' it will leave me. I will fly up to the Moon, for that is the only thing in the sky which is near enough to pull me to it, an' that shall be my tomb, but before that I shall be dead because I will have no air to breathe."

He straightens up an' pauses a little, an' then he waves his hand an' says in a simple way, "Good-by to all of you."

An' at that moment I see him go

shootin' off of the stage fast as a cannon-ball, straight off over the heads of the audience, an' he disappears through the front of the theater. An' it is funny how the crowd looks, Mr. Wilson. They have blank looks on their faces, an' they look as if they is waitin' for the show to start.

So I am standin' in the wings, an' although I am a large man, I am cryin', for Dilmo has gone to his death by his own hand, an' he is on his way to the Moon, when someone grabs me by the shoulder, inquiring of me, Who was I?

"Why," I say, "I am Dilmo Deni's manager." An' when he inquires of me roughly, Who was Dilmo Deni, why, I am unable to speak. I am hustled from the theater, then, an' I go peaceful, for I see now that it is just as Dilmo had said it would be—nobody remembered him.

I was scared then, Mr. Wilson, because I remembered that the papers was full of Dilmo Deni, an' they will read about him in back issues, an' find out about me, an' question me. So I hurry back to North Ridge. It is while I am hurryin' back that newsboys are shoutin' an' people are askin', Who was Dilmo Deni?

An' after I have been home a week, I realize that I am the only person who can answer this puzzling question. So I came to you, Mr. Wilson, knowin' that since you are editor of *The North Ridge Sentinel*, you can tell the world about it, an' I hope they believe it, as the things I have told you happened just the way in which I said they did.

Question: Thank you, Mr. Judkins. Your story, when taken alone, certainly *sounds* impossible. But when used to explain another impossibility—the disappearance of Dilmo Deni—they both become not only possible, but the only mutually coherent explanations. As a mere matter of form, will you sign this affidavit?

The Forgiveness of Tenchu Taen

by Frederick Arnold Kummer, Jr.

Presenting one of the most beautiful and vivid descriptions of Old Mars science-fiction has ever produced.



Beyond, the drone of old Tenchu's voice quoted swift-changing gamblers' odds as the spores in the globe sprang to struggling life.

TO the casual sight-seeing tourist, Mercis, capital of Mars, is a marble definition of the word "beauty". Its stately white buildings, its green lawns dotted with clumps of flaming *fayeh* blossoms, its network of

crystal-clear canals, make it a garden spot in the eternal, dusty-red plain. And when you add bottle-lined Terrestrial bars, gondolalike boats manned by soft-singing little native boatmen, and exclusive, highly priced shops, the result is

a veritable mecca for the wealthy space-trotter. Even the bored dilettante, seeking the somewhat nebulous higher things in life, can find a haven in the Tolar Quarter, where appropriately hungry-looking artists, seated in the doorways of appropriately quaint houses, offer endless salmon-colored landscapes to the would-be patrons of art. Whatever your inclination, the canny little Martians can cater to it, for they overlook no item, however small, in their eternal game of exchanging cheap articles and pleasant memories for Terrestrial cash.

Yet in addition to this brilliant, gay city, there is another Mercis, unsought by, unknown to tourists. Far from the marble splendor of the big passenger port where the sleek luxury liners glide to the ground, there are the cargo docks, with their battered tramps, their rusty freighters, and plain, blunt-nosed vessels surrounded by a maze of gaunt cranes, cargo lifts, and gray storage tanks. And about the cargo port, like scum on the sides of a bubbling caldron, lies the Olech, dark and shadowy. Rows of drab, huddled houses; worn, grimy glass streets; stinking, rubbish-littered arms of the great canals. Dull, crystaloid walls made all the more hideous by tattered remains of posters; lean slinking *molats*, the six-legged tailless Martian hounds; ragged urchins and whining beggars, who, for a price, deliver questionable messages or obtain even more questionable information.

Here in the Olech, squat Jovian spacehands rub shoulders with languid Venusian traders; dark Mercurians drink with the *dāk-men* of Neptune; and tall Terrestrials swagger contemptuously through the crowds of "reddies", copper-skinned sons of Mars. Above the babel of a hundred polyglot tongues one can hear the sibilant hissing of the Martian dialects. Like flitting shadows the little reddies, clad in their long, loose dust-robcs, glide along the crooked

streets, mysterious, inscrutable.

Within the blank-faced houses of Ki Street, behind the busy stalls of the Space-Market, the old Martian religion carries on its dark and bloody rites, defying alike the Imperial Decree and the Interplanetary Covenant. Among clouds of forbidden, hysteria-provoking incense, the priests, their faces ruddy in the light of the ancient ceremonial lamps, offer the mutilated bodies of their victims to the great hungry black thing which, at the sound of the third bell, appears above the altars. A hypnotic manifestation, Terrestrial skeptics call it; but to the true believers it is Yonan, God of Gods, Lord of Terrors, Master of Magic.

Here, too, from behind the lattices of the so-called "Amen Alley", tiny, doll-like Martian girls smile appraisingly at passers-by and hawk-faced dopesters offer sure tips on the monthly space-races. At night, when the twin moons peer like two tiny baleful eyes from the heavens, and the sallow light from the little shops makes orange oblongs on the narrow streets, you can hear the pulse of multiphone music, throbbing, moaning, as though teetering on the borderline between pleasure and pain. And above the music can be heard the excited muttering of the reddies as, crowded about the great glass globes within which the green fungoid spores struggle for supremacy, they bet with fatalistic recklessness, knowing full well that, by the Law of the Olech, the bodies of welshears are found within twelve hours floating on the dark waters of the Han Canal.

PERHAPS there is no more famous place of chance than that belonging to Tenchu Taen. Here, the draperies are pure cellosilk and the tables inlaid with gold; fiery *tong* and cloudy *olo* are yours for the asking, since, Tenchu argues, liquor dulls the players' wits and so increases the house's profits. Here

the air is heavy with the smoke of a dozen narcotics, and the eager voices of the little reddies clash in a harsh cacaphony of sound. At the head of the long central table sits Tenchu, sharp-eyed, tense, motionless, a bland god of fortune, droning his monotonous exhortation. "Place your bets! Place your bets! *Ai . . . eee!* The struggle commences!" And within his round, hairless head he keeps a hundred bets, a hundred shifting odds. Keeps them so unerringly that the most hardened gambler will take Tenchu's casual word to another man's oath.

Yet apart from the scores who crowd about the gleaming glassed globes, there are those who, like Johnny Greer, seek the house of Tenchu for another reason. That reason is Eyehla.

Directly behind Tenchu there is a green curtain. And at regular intervals throughout the evening he will pick up his pile of winnings—to leave the money on the table is considered bad taste, boasting—and carry it through the entrance to the room beyond. It is in these brief moments when the curtain is swept aside that those who come to see Eyehla are rewarded. A fleeting glimpse, no more, of an invitingly small mouth, of high cheekbones, of sleek black hair wound tiara-fashion about her head. Her skin, defying the traditional rusty-red, glows like soft rose petals. She is, somehow, like a painted porcelain princess.

It is not so long ago that Eyehla had more than mere beauty. Beneath her placid Martian loveliness there was a young and eager vivacity, a joyousness quite out of keeping with her strict Martian upbringing. Two opposing philosophies, tugging at the girl, created unbalance, a fierce inner tension. In the streets, in the market place, she saw the tall, long-striding Earthmen, voyagers of space who had brought to decadent Mars a new energy, an adventurous, exciting scheme of things. Their

vigor and vitality thrilled Eyehla; she wanted to be a part of it, to break the ancient rules and traditions that bound her life. Within the walls of her home there was only ritual, meek servility. Women, her father used to say, were slaves of the three obediences—obedience in childhood to their fathers, in marriage to their husbands, in widowhood to their sons.

At the age of nineteen, by Terrestrial reckoning, Eyehla entered submissively upon the second obedience, to find herself virtually a prisoner in the back room of the gaming house, sorting a heterogeneous harvest of Martian *thaels*, Terrestrial dollars, Jovian *solts*, and listening to the dry voice of her husband, Tenchu Taen, as he quoted his interminable odds. A dull, unromantic existence; yet if not happy, Eyehla was still by no means miserable.

IT WOULD BE difficult to compare Johnny Greer with anything of Mars. There was nothing tender or delicate about him. He was, in fact, as hard as tempered *ixite*. More, his presence in the Olech seemed something of a mystery to the silent, observant reddies. Crisp-voiced, brittle-eyed young Terrestrials were not in the habit of burying themselves in the stench and squalor of the cargo ports. Naavic, the genial Ki Street spice merchant, remarked that there was a peculiarly shaped bulge beneath Johnny's left armpit, a bulge which might readily have been made by a shoulder-holstered heat gun. The police, Naavic went on, were looking for the Terrestrial gunman who had recently robbed a Psidian jewel merchant and shot down a bystander in making his getaway. Therefore Johnny—

"A youth should always be regarded with respect. How do we know that his future may not be superior to our present?" Tenchu had answered ponderously. And since Taen was a person of great wealth and authority, the reddies

accepted Johnny Greer at his face value.

It was inevitable, of course, that Johnny should fall a victim of Eyehla's slim perfection. The wistfulness of her, the childish gravity of her smile, were new to him, filled him with chivalrous—if not altogether altruistic—dreams of rescuing her from the solemn Tenchu. And because Johnny was young, handsome, Eyehla also dreamed—dreams in which he was the central figure. So, although they had spoken hardly a dozen words, tinderlike thoughts filled her mind, ready at any moment to burst into violent flame.

The tinder caught one stifling summer night. It was the Festival of the Two Moons, the most ancient of Martian holidays, and the Olech blazed with lights. Spacemen of every planet, red-dies in their finest robes, dark desert men from the burning plains of Psidis, mingling in a kaleidoscope of color. The Space Market echoed with the chatter and laughter of the crowd, the shrieks of children, the raucous shouts of the liquor-venders, the blaring music of an imported Terrestrial band. The shuffle of myriad feet, the purring of canal-cabs, the *slap-slap-slap* of the waves in their wake. Smells of cheap food, fresh *gaahl* roots, roasting *reth-fowl*, tainting the clean, thin air. Faces, dull faces, grinning faces, sad faces, lurid in the greenish light of the *radite* arc lamps. A torrent of life, caught in the carnival spirit and swept aimlessly along the twisting streets toward a phantom destination.

In the tiny apartment behind the gambling room, Eyehla bent over the table, sorting a heap of change into small, neat piles. The doorway leading to the street was open to admit a breath of air, and Eyehla, aware of the coarse, blatant crowds that choked the town, shuddered. She felt hemmed in, crushed by the weight of their personalities. Through the thin green curtain that hung in the entrance between the room and the gambling hall, she could hear Tenchu's un-

varying chant:—"Place your bets! Place your bets! *Ai...eee!* The struggle commences!" And always the ceaseless jingle of money, the eager shouts of the spectators. Eyehla's fingers tightened until her nails bit into her palms. If only someone like——

"YOU ARE very lovely," said Johnny Greer softly.

Eyehla glanced up, confused, as one surprised in a secret dream. He was standing in the doorway, slim, carelessly handsome. His eyes, fixed on her face, were like bits of glittering blue *thorene*.

"Johnny Greer! You must not say that!" Her glance flickered toward the curtain. "I—I have work to do!"

"Work!" he whispered. "Work is not for you. You should be a queen with a thousand slaves to wait upon you." The liquid Martian syllables came haltingly to Johnny's Terrestrial lips. "You are a *jayeh* blossom. The foul breath of the old man will wither you."

Eyehla stared at him, swaying slightly. A chance to break away from the eternal obedience, to be free like Earth women! They selected the men they wanted, without regard to parental orders. Here was a man, young, good-looking, ready to grant her slightest wish, to live for her pleasure. And so strong, so completely able to protect her from the merciless conventions of Mars. Eyehla thought of Tenchu, solemn, grave, maddeningly deliberate. His emotionless mien, his elaborate rituals, his dull, long-winded discussions. A sudden flare of rebellion gripped her. An opportunity to break those musty laws and traditions that had forced her into this marriage, to know the liberty of the people of Terra! She had the right——

Tenchu's voice in the gambling room outside resumed its sing-song drone. Eyehla cowered at the sound of it.

"Go," she whispered. "Go away!"

Johnny Greer did not go. He stepped forward, gripped her arm. Eyehla trembled. The look in his eyes, the strength of his fingers—

"You will leave with me tonight," he murmured. "Leave all this. Away from people, from work, from—ugliness. Just we two—"

The sickening reek of cheap *tong* drifted through the doorway. Harsh voices, drunken laughter. Sand gritted beneath Johnny's feet. Eyehla tried to think. Earth, so they said, was fresh and green and beautiful. No stinking canals or hot, sandy deserts. But her husband—

Johnny drew her closer. The brave free life of her dreams seemed very near, and Tenchu's chant suddenly far-away. Her tense body went limp under the Earthman's gripping fingers.

"Johnny—"

"Tenchu will keep the place open late tonight. He will be too busy to notice if you leave. I'll wait for you at the old space-beacon on the plain outside the city." He glanced at the heap of money on the table. "How much is there?"

"Nearly a thousand *thaels*. This is our biggest night. The Festival of the Two Moons—" Remembering old Naavic's earlier suspicions, her face went pale.

"Good. Bring it."

"No. No!" Her throat was suddenly dry. "That's stealing—" Spots of tarnish were beginning to appear on Johnny's shining armor.

"Listen, it's just a loan. I'm short of cash right now. We'll need it to get away. I can send it back soon—as soon as we reach Terra." He swept her into his arms, kissed her. "Be at the space-beacon about eleven. We can reach Psidis by dawn, get a ship there for Earth. You'll come?" The question of money brought an added insistence to Johnny's pleadings.

Eyehla swayed under the sweet sting

of a dream. Nothing was very clear except that she was going to leave the Olech—leave Tenchu and his dry quotations, his stodgy friends, his relentless customs. Tenchu had not loved her—not as she imagined love. Johnny promised all she had hoped for. Love. Romance, instead of obedience. The beauties of the green, verdant Terra.

"At eleven." She clung to him tightly in a last furious embrace. "Now go. Go!"

IN THE GAMBLING room outside, Tenchu, his face set in a crinkly automatic smile, raked in a stack of money. "Good fortune attend your future wagers! *Ai . . . eee!* Place your bets!" That also was automatic. He was not even conscious of having spoken. His back to the curtain, he gazed blandly at the crowd, giving no hint of the cruel talons that tore at his heart. Where an Earthling might have acted impetuously, Tenchu, following the baffling logic of the red planet, began to reason to seek a solution. Eyehla talking to Johnny Greer, believing that he was too busy to listen to what they said. As if, after so many years, the noise of the crowd made any impression on his ears! Johnny Greer touching his wife with eager fingers, holding her in his arms! Someone's life would have to—

Tenchu changed a ten *thael* note for a gray-uniformed spaceman. "Try your luck! Place your bets!" He glanced at Johl, his assistant, standing at the other end of the table. Johl could not have heard—nor any of the others, with their attention focused on the writhing, twisting spores. Perhaps, if he acted quickly, no one would learn of his shame. Eyehla should be punished. But she was so beautiful— It was a difficult matter to decide. The Terrestrial had spoken of love. So did many of his kind—on Mars. Back on Earth the scorn of their friends quickly made them abandon the

red-skinned "natives".

"Johl!" Tenchu called, turning toward the green curtain. "Take care of the customers. I shall return later."

He went into the back room. Eyehla, seated motionless at the table, spun about guiltily as he entered.

"You seem startled, *matana*," he murmured impassively. "Is anything wrong?"

"Nothing, my husband." Her eyes remained fixed on the stacks of money.

"Good." Tenchu nodded gravely, passed a hand over her sleek black hair. "I must go to see Naavic on business. I shall not return until after midnight." He took his long dust-robe from the closet, picked up a small black object that lay on the shelf and dropped it into his pocket.

Midnight! Eyehla fought back a wave of exultation. Easy for her to get away, meet Johnny, now! And by the time Tenchu had returned, they would be far away, on the route to Psidis. Yattic, god of good fortune, smiled.

"Watch the money carefully," Tenchu said, moving toward the door. "Until later, my Eyehla."

Without turning to note her expression, he strode through the doorway into the narrow side street and along it to the house of Naavic, the spice-merchant. Old Naavic, his round red face gleaming, seemed surprised by this late visit.

"Come in," he smiled. "I am just finishing some special work." As though to prove the point, he bent over his desk, began checking down a long bill of lading.

TENCHU STOOD watching him. He liked the smell of the little shop, the warm odor of Jovian *teel*, the clean fragrance of Venusian *zoth*. Sweet and fresh—like Eyehla. Such a silly child she was——

"I am worried," Tenchu said slowly. "The burden of worry is more easily

borne by two," Naavic observed absently.

"What would you do," Tenchu went on, "if you discovered your wife to be unfaithful?"

"Eh?" Naavic looked up, grinning at the thought of his fat, homely spouse being untrue. "I should offer her my sincere congratulations!" He laughed, wheezingly. "Why do you ask?"

Tenchu leaned back in his chair, toyed with the glittering *solene* luck charm that hung about his neck. When he at last spoke, his voice was like the rustling of sheer cellosilk.

"I have learned," he murmured, "that a—a friend of mine is being deceived by his wife. Yet I hesitated to tell him for fear he may kill her."

"Kill her?" Naavic repeated. "If he does not value the woman, then why should he care? There are many more in the slave marts of Santu. And if he does value her, why deprive himself of her charms?"

"True." Tenchu nodded. "But surely this husband will kill the lover?"

"That would show little wisdom." Naavic replied, shaking his head. "Even if he should escape the police, his wife would always regard him as a murderer and mourn the martyred one who gave his life for her."

"Then," Tenchu muttered impatiently, "what will this husband do?"

"If he is wise, he will forgive his wife, thus increasing himself in her eyes and belittling the lover who, shamed, will depart."

"Ha!" Tenchu stood for a moment in silence, stroking his chin. "It may be that you are right. I shall tell this husband to offer forgiveness—at the proper time."

Naavic stuffed his long pipe with coarse black *shole*. "Do I know these people of whom you speak?" he asked casually.

"No." Tenchu shook his head. "Health and happiness, Naavic. You

have spoken with great wisdom."

Leaving the little spice-shop, Tenchu glided like a soft shadow through the narrow streets. Along Ixtan Way, with its grimy signs in twisted Martian characters, its tumble-down houses, pitted and eroded by the howling red sandstorms from the desert. Past the Space Market where, in the brilliantly lighted bazaars, sharp-faced merchants haggled over their wares. Beggars whining wearily; soft voices calling from behind ornate lattices; and those who live by darkness creeping out of black doorways to people the night with vague, living ghosts. An occasional ship, out-going or in-coming, gave the dingy streets momentary splendor as its rocket-flare gilded them in ruddy gold.

Now Tenchu was following the Han Canal, filled to overflowing with melted ice from the polar cap. The dark waters were splashed with patches of light from windows, strewn with the reflection of the high, cool stars. Canal-cabs raced along its surface, sending up clouds of spray as they wheeled to avoid leisurely private boats, heavily laden cargo craft. At intersecting canals police whistles shrilled, silver spurts of sound in the darkness. Tenchu moved with impassive swiftness, his face a stolid mask.

AFTER half an hour's walking he approached the raw, ragged edges of the Olech. A few scattered houses, a fringe of rank vegetation, and the desolate red plain stretched before him, barren, interminable. Here there was no road, no canals; only the wind-blown dunes broke the horizon. Tenchu stared across them at the old abandoned beacon, a gaunt tottering wreck against the savage purple sky. In the distance he could see the lights of Psidis, glowing faintly like a drop of phosphorus spilled on the desert.

Tenchu turned, headed toward the beacon. It was hard walking. The loose, dry sand gave beneath his feet,

leaving shapeless impressions swiftly smoothed away by the wind. The dunes, fringed with sparse, tall grass, were like giant bald heads. Tiny stalk-eyed bats dipped and circled overhead. The wind sighed and the sand rustled softly. All at once Tenchu was standing beside the tall beacon. There was no sign of life about its crumbling girders. Tenchu nodded. He was early. Squatting in the shadow of the building, he waited.

Visions of Eyehla's slim young beauty danced before his eyes, brought a choking sensation to his throat. She was foolish, yes, but so lovely. Naavic had been right—there was only forgiveness.

The indistinct outline of a tall, swift-striding figure brought Tenchu to his haunches. Humming to himself, Johnny Greer plodded toward the ruined structure. The venture, he had decided, promised to be both pleasant and profitable, as well as a great deal less risky than some of the other incidents of his highly colored career. Of course, it was still a bit dangerous to return to Earth, but by now the affair of the missing radium should have blown over sufficiently—

Crouched in the pool of darkness at the base of the beacon, Tenchu waited. The humming grew louder and Johnny Greer stepped into a patch of moonlight. He was carrying a small satchel in his right hand. Tenchu straightened up, smiling mildly.

"Tenchu!" The satchel fell from Johnny's hand. "What do you——"

Before he could finish the question, Tenchu stepped forward, drawing a small black object from beneath his robe. A pale, tenuous thread of light linked the two for a moment. Johnny Greer's legs buckled under him; he sighed faintly, pitched forward to the ground.

For a bleak instant Tenchu stared at him, watched the thirsty sands soak up the trickle of blood. It was scarcely necessary for him to feel Johnny's wrist

to know that there would be no pulse; the little proton gun had bored a neat, round hole in the Terrestrial's forehead. Tenchu nodded, began to rummage through the dead man's belongings. A cellosilk handkerchief, bearing the initials J. G., brought a satisfied smile to his face. He stuffed it into his pocket.

Turning from the body, Tenchu scooped a hole in the sand. His lean, curved fingers dug swiftly to form a shallow grave. When Johnny Greer had been thrust into it, with the satchel for a pillow, and the sand pushed back into place, Tenchu stood up, regarding his work reflectively. Little danger of the corpse being discovered. No one other than an occasional desert nomad ever visited the barren, wind-swept dunes. Tenchu, regarding the heavy little proton gun, smiled beatifically.

SOME MOMENTS passed before he saw Eyehla walking briskly toward him. Tenchu drew a sharp breath at sight of her. In the dim, soft light her glossy hair seemed almost blue. There was a grace, a lilt to her walk that filled him with sudden fierce anger. So she was happy at the thought of leaving him for Johnny Greer! And that small sack, hanging heavily from her hand! His money! *Thaels*, dollars, *solts*, even rare *zetals* from Pluto! A thousand *thaels*—more! And she believed that Johnny Greer had wanted it only as a loan. She herself would have been only—a loan! Such a trusting little fool! Tenchu stooped low, hastily wrapping Johnny Greer's handkerchief about the butt of the proton gun.

Eyehla was quite near, now. He could see the glint of her yellow *solene* necklace, the scarlet of her lips against her rose-pink face. She approached the base of the building, glanced nervously about, still clutching the heavy sack.

With catlike softness Tenchu crept from the shadows. The sand deadened the sound of his approach. Now he was

close behind her, his arm poised.

It was very quickly done. Eyehla slipped to the ground without a murmur. Almost before she reached it, Tenchu was kneeling at her side. He smiled, noticing that she breathed regularly. The blow from the gun-butt, deadened by the handkerchief, had been light. Her skin had not even been broken. He would have to work quickly before she came to.

He unwound Johnny Greer's handkerchief from the gun, laid it on the sand beside her. With trembling fingers he removed her necklace, her rings, and, snatching up the sack of money, ran hurriedly toward the town.

MIDNIGHT was just blinking on the red time-signals when he entered the town. The Olech seemed strangely quiet. Gambling houses, taverns, the little latticed windows, had drawn the crowds into their nets. An occasional *tong-sodden* spacehand; a slinking, soft-footed *molat*; a stocky policeman leaning against a lamp-post—apart from these the streets were deserted.

Tenchu found his own establishment in full cry. Johl, at the head of the long table, was having difficulties in keeping track of the swift-changing odds. Shaking the sand from his clothes, Tenchu stepped into the little back room.

The apartment was just as he had left it. Eyehla had written no note of farewell. Tenchu placed the sack of money, the jewelry, in his strong-box, locked it securely. He was just pouring himself a glass of dark *olo* when he heard the dragging footsteps outside. The door swung open and Eyehla lurched into the room, her face gray with pain.

"Eyehla!" Tenchu ran to help her. "What has happened?" He glanced toward the adjoining bedroom. "I thought you were in there—asleep!"

"My husband!" She crumpled to the floor at his feet. "I have done a great wrong!"

"Eh, *matana?*" Tenchu murmured, blinking. "You——"

"I promised Johnny Greer to leave you—to run away with him." All the Terrestrialism, the spirit of rebellion, had fallen from Eyehla; she was now entirely Martian, meek, woebegone. "I took your money, went out to the desert to meet him. And"—her voice suddenly broke—"he struck me, from the shadows, stole the money and my necklace, my rings. I know, because of this handkerchief I found beside me—— I was a fool to believe such a man!"

"So." Tenchu's lean, strong hand caressed her cheek. "Do not blame

yourself. You are young. The money is well spent if it has taught you wisdom."

Eyehla glanced up at him, unbelievably. "You forgive me?" she whispered. "After what I have done?"

"Surely, *matana*," he said gently. "The matter shall be forgotten. Forgiveness is ever the test of true love, aye, and the goal of the virtuous." Smiling benignly, Tenchu scraped the sand from beneath his fingernails.

Somewhere out in the sultry Martian night a rocket plane roared. The staccato coughing of its exhaust was like deep mocking laughter.

"IT CAN'T BE DONE!"

ABOUT a century ago, when chemistry was making its first rapid strides toward real control of its subject, it was "known" that there was a subtle difference between inorganic, or mineral chemistry and organic chemistry. Organic compounds, it was taught, could not be made from mineral elements—the mysterious and mystical "life essence" was needed to accomplish that. When Wohler, a German chemist, first synthesized urea from inorganic matter, he himself did not believe it until seven months of careful checking experiments had convinced him he must have done, by accident, what was "scientifically impossible."

From that start, chemists, now convinced there was no mystery, save patience, needed to tailor molecules to their own ends, rapidly conquered the difficulties of organic synthesis. Urea, that first of organic syntheses, is now one of the greatest. It is made in such immense quantities for the plastic industries that as much as 50,000,000 pounds may be stored in one warehouse.

Today, physicists are just beginning on their job of learning to tailor matter. Not molecules now, but the infinitely more intractable atoms. Fifty years ago atomic transmutation was one of the "It can't be done!" items of science. In 1900 the cry had changed to "It can't be done by Man!" Radium had exploded in their faces. In 1918, Lord Rutherford's transmutation of nitrogen by radium bombardment altered the tune again, now to "It can't be done practically!"

Biochemists and medical men are coöperating in a study of the as-yet invariably fatal leukemia, learning a little about its actual mechanism, by tracing its course with radioactive phosphorus. The physicists designed and transmuted the atoms for them to work with. They are also studying the metabolism of sodium in animals by using radioactive sodium transmuted by the new processes. Radio-iodine interests them, for iodine settles in the thyroid gland—from which cancer-destroying atomic radiations could attack cancer cells lodged in the lymph glands of the neck very accurately.

The next step would be to transmute to some of the very rare, but highly useful elements, and to tailor atoms to fit special jobs. Perhaps making the yet-untested atoms of the exceedingly rare metals chemists haven't found in quantity sufficient for investigation.

The Silver Sphere

by Royal W. Heckman

The way of the Silver Sphere took him through to the world of the Caplons—who copied everything they saw, from dynamite to books with some pages blank!



JUNE 4, 1938. . . . The *Things* are watching me. I can feel their unseen eyes follow my every movement. They intend to take me back to that metal chamber—maybe keep me there. I don't know why they want me or what they intend to do, but I do

know the object through which they are working.

The Silver Sphere. A six-inch ball of glistening metal I found buried in my garden. That was several weeks ago; it has been on my mantel ever since. It appears harmless, but the feeling of be-



For a moment the Caplons halted, confused at the sudden death of the rifle—

ing continually stared at began the day I placed it there.

I saw the creatures last night. After working on my mystery novel until midnight, I had lain on the day-bed in the

living room of my cabin, intending to work again after a short rest. But I fell asleep. The Silver Sphere danced before me, and it happened.

A blinding flash—a sensation of

swift, hurtling motion—and I was sitting in a richly carved, high-backed chair with the glistening globe dangling above my head. Padded leather straps held my arms and legs to the seat.

I was in a vast chamber built entirely of gray metal. The chair was on a platform at one end. At the other end was a wide open arch with a courtyard beyond it.

The room glowed. I wondered where the light came from, then saw it emanated from the walls and ceiling. It was not especially brilliant, and came from no particular point, yet every object in the place was brought out with remarkable distinctness.

There were low-railed porches on my left. These were attached to the wall in tiers and reached upward to the ceiling high above me. And they were occupied.

The occupants moved. But before I could see them clearly, my glance was drawn by a movement upon the floor. And right in front of the platform, their large, lidless eyes blank and staring, stood three of the strangest creatures I have ever seen!

I looked at them intently. Then I blinked rapidly, and looked again. They were still there.

Hallucination. That explanation made me feel better. For they were something that just couldn't be! As though men and beasts and fish had been crushed together, and these composite creatures built from the bits that had splattered about.

They had human heads—greatly distorted—and round, fleshy stomachs and chests. Their noses were beaks that hung over wide mouths, and their lips never closed sufficiently to hide the double row of canine teeth behind them. But what made them really horrible was the thick, greenish scales that covered their legs and backs and crowned their heads with glittering skull caps!

They wore breechcloths. These were

fastened to a crisscross arrangement of leather bands that wound about their torsos and ended in metal boxes upon their backs. And they were armed. Long swords dangled from their belts.

The Things were talking. They would examine me, then swing their arms toward the balconies, and shout. Hundreds of similar creatures squatted there. They shouted back. Then the largest of the three stepped forward. At the same time, two more came from behind me and undid straps that bound me to the chair.

I stretched my legs—got the blood circulating. Then I looked about me, impressing the details of the strange scene upon my mind. I knew I was dreaming and wanted to remember all about it. I stood up.

NOTHING happened. The Things did not vanish. They fell silent, but made no move. My two guards pressed against me, gently pushing me forward. I stepped off the platform and stood in front of the three who waited.

The one in the middle—evidently the Chief—bowed. He appeared pleased when I did the same. He motioned and turned about. The three walked away. Urged on by my guards, I followed.

They led me to a tiny, stagelike recess in the right wall. A motley array of objects were piled within, and a single chain stretched across the opening. Halfway there, I saw what the objects were. I shook loose from my guards and ran forward.

They were mine! My desk was in the center of the stage—my typewriter upon it. Beside it a stuffed owl, a deerhead, and many smaller articles had been neatly stacked. The creatures had my bookcases and books—even the rifle I had carried in France and smuggled home! In fact, the contents of my living room had been transported bodily to that chained-off area!

The Things gathered about me, watching. But they made no move to stop me, so I stepped over the chain.

I went straight to the desk and tapped a key on the typewriter. It worked. I inserted a sheet of paper and dashed off a few sentences. The machine was in perfect condition.

The rifle lay upon an end table. I picked it up, glancing at The Things on the other side of the chain. They were in a tight group, watching me. I gripped the bolt handle, and jerked.

Fear flashed over me. There was something wrong—something inexplicable. For the bolt-handle did not move!

I examined the rifle, an army Springfield. It wasn't even a rifle! It was a dummy gun built of solid steel and wood.

The chief creature saw my bewilderment. He spoke in a meaningless jargon and pointed at the gun. I held it out and pantomimed the trouble. And I was convinced.

It was not a dream, then. The rifle proved that definitely. For if I were dreaming, the gun would have been in the same excellent condition as the typewriter.

But why was I here? Why were my things stolen and placed on exhibition in this room? And then I wondered if they *were* mine!

I lifted the sheets of paper on the desk. My story—the mystery novel I was writing. I opened a book, "Shakespeare's Complete Works". The book was blank. No, not blank. "Hamlet" was there in full, and a double page of "Julius Caesar". My dictionary had page after page of definitions, then countless blanks. The rest of the books were the same.

An idea was forming while I studied that library, comparing the pages I had read with the blanks. Then I tumbled.

That was it. *I had read* these pages. The parts of the books that appeared here were the parts with which I was

familiar. Anything I had not recently read had not been printed!

I looked up, dazed. The Silver Sphere, still swaying gently above the chair, caught my eye. Something clicked. I had read every page that was printed here *after* I had found the Silver Sphere!

I think I shouted. I know I dashed the rifle upon the floor. The Chief screamed, and two of The Things leaped over the chain.

The struggle was brief. The creatures were shorter, but heavier and stronger than I. They carried me to the platform and forced me into the chair. There was a blinding flash—an interval of blank space—and I awoke. I was back on the day-bed in the living room of my cabin.

JUNE 18, 1938. . . . The creatures have come again. They took me to their metal caves last night. There I was given proof of their reality, proof that is horribly and painfully physical. My left hand has been severed at the wrist!

The objects upon that tiny stage are not mine. They are imitations. The Things can see into my living room—can make anything they see. The material they use is not always identical to that in the original, but it is never inferior. And their workmanship is faultless.

After that first visit, I examined my possessions. There was nothing wrong. I went through many of the books page by page. I took the rifle apart and re-assembled it. I even brought a half-dozen clips of cartridges from the garage and broke one apart and tested the powder.

Only articles from my living room had been there. The unseen contents of drawers and cupboards had not been duplicated. So it is obvious that the power of the Silver Sphere coincides with its vision. And equally obvious

that the Scalylegs can make things only as they appear to the Sphere. That was why the typewriter had worked; they had seen it in operation. But the gun had been made as it had appeared to them—an object of solid wood and steel.

I understand, too, the part played by the day-bed. It is in the living room, under the influence of the Silver Sphere. I slept there last night. A dazzling flash, an age-long instant of tumbling speed, and once more I was strapped to that intricate chair, and the Silver Sphere swayed above me.

The three creatures stood before me, bowing a welcome. I nodded, the chair straps were loosened, and I was hurried across the floor to the stagelike recess.

I stepped over the chain and glanced about.

The stage was crowded. The new objects I had brought into my living room, or taken from drawers and cupboards, were there. I looked at them curiously. Then I turned to the books.

A few minutes sufficed. The blank pages were no longer blank; the books were printed in full. It was a bit bewildering. For I had not read them, had merely turned the pages swiftly. Yet that momentary glance had been sufficient to permit these strange beings to reproduce the contents!

The rifle lay upon the desk. I picked it up gingerly, my eyes following the movement of The Things on the other side of the chain. They were watching my hand upon the bolt-handle.

The bolt slid back easily. The barrel was clean and correctly rifled. I sighted along the sights, worked the bolt and pulled the triggers several times. Then I bowed to the Chief and handed the Springfield over the chain.

Six clips of cartridges were there. The creatures made things only in the quantity set before them. I pulled one cartridge loose, broke it apart, and dumped the powder upon a table. Took

a match from a small box near an ash-tray and scratched it on the box.

The match flared. I dropped it onto the little mound of powder. There was a brilliant red flash as the powder ignited.

The Things on the porches shouted and the Chief pointed commandingly at the cartridges. I shook my head and extended my hand for the rifle. He drew back, gripping it tightly and holding out his other hand.

I didn't like that. So far, I had been treated in a friendly manner, but I did not know when the antagonism of my captors might become aroused. And when and if it did, I would need that rifle.

We both gestured wildly, shouted things the other could not understand. But it got us nowhere. In the end I had the cartridges, and he had the rifle.

THE MONSTERS held an animated consultation. One of them hurried across the room and passed through a small archway between two of the ground-floor porches. After ten minutes of tense waiting, he returned.

He was followed by two others, escorting something between them. I gasped audibly when I saw what it was.

A girl! Not a female beast, but a beautiful Earth-girl. At least, she resembled an Earth-girl, though her dark, shining eyes, her wavy, coal-black hair and finely molded form carried that resemblance to unearthly perfection.

She wore a very short red skirt, and a bodice of bright blue—had a wide leather belt around her waist. She, too, was armed. A long sword similar to the ones worn by the Scalylegs dangled from her waist. She advanced boldly, her leather sandals tapping the floor with dainty firmness.

She stopped in front of the stage and spoke sharply. The Chief, who answered for the other six as well, shook his head and broke into lengthy speech.

But the girl was not to be denied. Her words came swiftly, and she caressed the hilt of her sword significantly. The big fellow bowed. She turned to me.

"Don Winters." Her voice was low and even. "It is desired that you give the things in your pockets to these Caplons. If you do not do so, they will be taken from you by force."

I could only stand and gape. I had expected her to bombard me with the same jargon that had proved so successful against the Scalylegs. And she knew my name!

"Who are you?" I placed one hand on the chain and leaned forward. "And what is all this rigmarole about?" The whole assemblage was included in the sweeping motion of my hand.

"Rigmarole?" She looked puzzled. "That is a word you have not written or uttered before. I do not know it." She smiled as though that fully explained everything.

"I am Verlanda, daughter of the House of Melwer. I am held captive by the Caplons, the Under-people of Belver. I learned your language by listening to you speak while you were on Earth and by reading your writing and books through the power of the *glesters*."

She might as well have used the jargon.

"Wait a minute." I held up my hand. "I know nothing about the things you have mentioned. Belver—Caplons—*glesters*—Under-people—all of that is new to me."

She sighed resignedly.

"Belver is a planet equal in size to Earth, but about eight of your light-years away. We Fairians rule the settled part of this sphere, and the Caplons are our Under-people, our Workers. Your mentality has been brought to Belver through the power of the *glester*, the Silver Sphere you found on Earth. The Caplons have made many of your properties also; for what rea-

son, I do not yet know."

The explanation sounded wild.

"If we are upon Belver, how is it that you can speak English?"

"It was easy." She smiled again. "The *glesters* are powerful sending and receiving sets for thought, sound, and vision. When you are in your cabin, we can see and hear you from these caves. Our brains are photographic. A glance at a printed page files that page away for examination at leisure. I learned your words from the books you showed us, particularly from your dictionary. You taught me the pronunciation when you so often read aloud from the story you are writing on that damn machine."

"On *what*?"

"That thing that prints words when you push on it with your fingers. You called it 'typewriter' at times; more often, 'that damn machine'."

"Stick to 'typewriter'," I said hastily.

"CHAGWAR, Supreme Caplon and ruler of our Under-people, wishes me to act as his interpreter in securing those things."

"Tell Chagwar I do not intend to give them up. And the rifle must be returned to me."

"They will never return it. They think it is a weapon of destruction and that those things in your hand are necessary to its operation." She paused and looked quizzically at the Caplons.

"I do not understand our Workers. They have never before resisted their superiors. If they should acquire weapons against which our swords are useless, they could annihilate our race. My purpose in insisting on an interview with you was to learn if any of the things you have caused to be placed in their hands can be used with deadly intent."

"The rifle," I said grimly, "is a terrible weapon of offense. With the bayonet you see on that end table attached, it is even more deadly. These cartridges

can be put into the rifle and fired very rapidly. Each would easily kill one of your race at a distance of three miles."

Her face blanched. "They must not have it!"

She spun about, her hand once more upon her sword. I was ready to leap to her assistance, when she faced me again.

"It is too late!" She spread her hands in a helpless gesture. "They already know; they can make thousands of them now. The cartridges, too. Oh, why did you do it?"

I said, "I didn't. I only meant——"

But she interrupted me. "It is not your fault. But maybe"—she looked at me hopefully—"maybe you have other weapons, more powerful. If we could get them——"

"I have other weapons," I said slowly. "I believe I can have them brought here without the Caplons knowing their purpose. If we can get enough of them made, and distribute them among the men of your army, we would have an excellent chance."

"The women," she corrected. "I am the Commander-General of the Fairian army of women. There are no men in Fairia."

"No men!" It sounded incredible. "What sort of people——"

"Listen. The Caplons will not wait much longer."

"The Fairians came from your planetary system. They lived on Caltor, the planet near Earth, and now dead."

I muttered, "Ma's!" She shot a quick glance at the Caplons, then went on.

"My forefathers migrated here in space vessels, first dropping the *glester* upon your planet because they knew Earth would some day be habitable. They conquered the Caplons and made them their Workers. The ancient Fairians were a powerful nation."

Her brow puckered in thought.

"There is much I do not know. The

Middle Period—the Rebellion of the Females—the passing of the Law of Succession. But the women of the House of Pintor have ruled for ages. And for ages, we have been a nation of females.

"We have no men; we have *males*. They belong to the government—are bought and sold like *moakers*, our meat beasts."

I said, "Hell!" and she repeated it.

"Hell! I do not know the word, but your tone is understandable."

I began to doubt my fitness as a teacher of English.

"Why are the Caplons holding you prisoner?"

"I do not know. They are in rebellion. They have cut off our supply of manufactured food and machine-constructed products. Supreme Commander Hextor sent me to ascertain the reason and demand that that supply be resumed."

"THESE CAVES are buried beneath the surface of Belver. A deep valley leads upward on the other side of that wall." She pointed to the outer wall I could see through the wide archway at the forward end of the chamber. "We always came here through that valley and an entrance in the wall. When I reached here, I found that the Caplons had recently sealed the entrance."

"Then how did they capture you? How did they bring you here?"

"They dropped down upon me from the top of the wall. They carried me over the wall and we landed in the courtyard beyond the arch. We flew. The Caplons have discovered the secret of the individual atmosphere vessels invented by my forefathers. They carry them in those boxes upon their backs."

"What have you decided to do?" I asked. I was toying with the cartridges. The sight of them had kept the Caplons in an expectant state, and they had remained quiet. "I assure you I will do

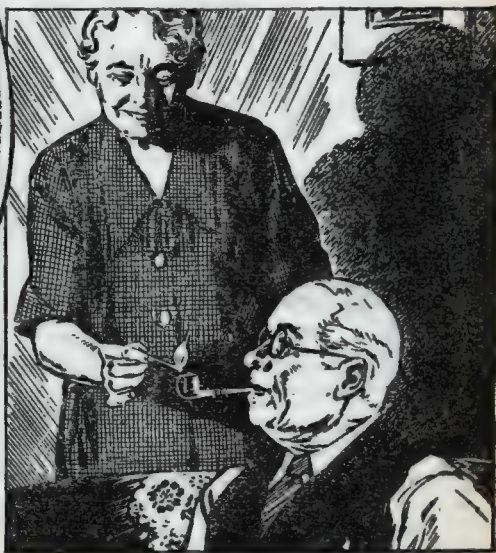
(Continued on page 137)

PALS

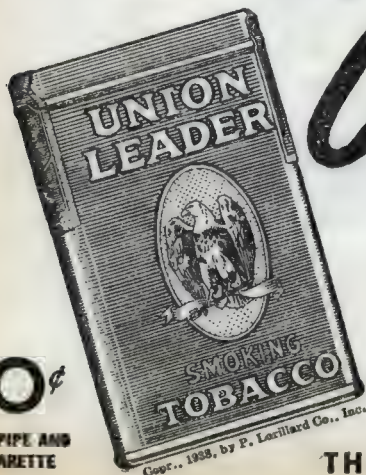
...through the years



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Union Leader

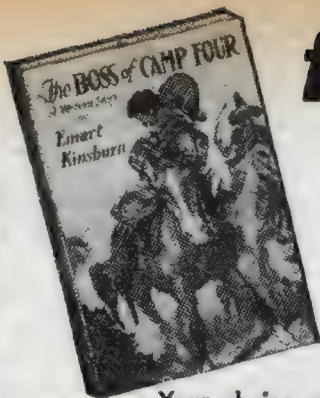
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all in my power to help subdue the Caplons and assist in your escape."

Verlanda nodded. But her face was serious.

"That is good. But I have no plan."

One of the aides spoke to Chagwar. The Chief beckoned, and the original three went into a close huddle. The four guards drew nearer.

I pressed against the chain and spoke hurriedly.

"What is back there—where you came from?"

"We cannot escape that way. There is no way to the surface. There are several large caves—the production chamber, the experimental rooms, the metal refineries, and so on. Beyond those are the homes of the Caplons. And beyond the homes are the mines."

"Could we hide there?"

"For a limited time. They would eventually find us."

The Caplons started toward us. Verlanda faced them, her sword half drawn from its scabbard.

"They are going to take the cartridges, Don Winters. Shall we fight?"

I said, "No."

There were seven of them. There were hundreds of others in the balconies across the room. We would have no chance. I played for time.

"Tell them they must take us to the court beyond the large arch. I will show them how the rifle is used and give them the cartridges. It is too dangerous here."

The Caplons objected strenuously; the girl was just as forceful in her insistence. Chagwar finally yielded.

We went through the archway side by side, with the four guards grouped about us. The Chief and his aides were close at our heels. They were determined to give us no opportunity to escape.

The courtyard was long and narrow, entirely enclosed. Walls, smooth as glass, reached upward for hundreds of feet. High above me I could see the

rose-tinted Belverian sky.

There was one small door in the outer wall. It stood open, but the solid metal inside the tiny apartment showed that it, too, had been sealed when the larger exit on its right had been closed by the Caplons.

Chagwar pushed forward. Verlanda said, "He wants the cartridges now. He said he would handle the gun. You are to tell him what to do."

There was no escape. I moved toward Chagwar, holding the cartridges in my left hand.

"Go to the door through which you first entered," I commanded the girl. "Quickly. I'll join you there."

Chagwar was distrustful. He drew back. Verlanda reassured him, and the Chief extended his hand.

As he was about to grasp the clips, I leaped. My elbow sank into his soft belly. He stumbled backward. And I had the rifle!

Before the rest could act, it was loaded. I shouted, "Back!" and shifted to meet the rush of the first two guards.

I shot them. They went down, writhing and screaming.

The other two guards rushed forward. I dropped them, too. Chagwar shouted hoarsely.

Caplons swarmed through the archway. A solid mass formed in front of us, a mass that advanced relentlessly with drawn swords.

I kept boring ahead. Shot, reloaded, and shot again. Tried to blast a hole through that scaly horde.

Verlanda stayed at my side. She fought furiously. I saw several of the beasts fall before her onslaught, then Chagwar himself grabbed her from behind. I whirled about.

It was my undoing. I started to raise the rifle. A long, sharp blade appeared from nowhere, flashed downward and sliced off my left hand. I saw that hand fall, saw the blood spurt from my severed wrist. Then I was smothered un-

der a crush of straining bodies.

There is a dim recollection of the chair, the blinding flash of the Silver Sphere, and that is all.

JUNE 23, 1938. . . . I am ready. I shall return to Belver tonight. A Browning automatic rifle and a Colt .45 which will, I think, insure the escape of Verlanda and me from the metal caves.

I expect little resistance. Even though armed with Springfields, the Caplons will stand little chance against my machine gun. But, in any case, I am prepared to blast our way to freedom. A large quantity of dynamite will be upon that stage.

The guns are not assembled. Their parts are cluttering up my living room, well mixed with other objects. The Caplons will not know their purpose until I assemble them when I am ready to act.

I could not disguise the dynamite. They may recognize an explosive but will not know how to use it. And past experience has taught me that it will be left upon the stage for me to explain.

A large supply will be needed. So I filled a number of bags with rocks, and placed a stick of dynamite in each. Then brought them into the living room.

I took the dynamite from one bag and held it in front of the Silver Sphere. I replaced it. Then I fumbled among the rocks that could not be seen through the heavy canvas and took out the explosive once more. This was repeated many times, and with each bag.

The Caplons cannot see the rocks. They will think the bags are full of dynamite; that I withdrew a different stick each time. And when they are duplicated, each bag will be full of dynamite.

A supply of ammunition for the Browning and Colt have been assured by the same process. I will not need caps and fuse; the dynamite can be exploded by concussion.

My left hand worries me. It is still dead. It will be severed when I land upon Belver. But I have learned to use that arm in helping my right hand and believe I shall have little trouble. So I am ready.

JUNE 25, 1938. . . . Many things have happened since that last entry. Much has been done; much has been left undone—and I am back upon Earth once more. Whether or not it will ever be possible for me to return to Belver, I do not know. I live with but one hope: that Verlanda and the loyal Belverians may some day bring about my transition.

The same flash, the same chair with the Silver Sphere above it—but not, by any means, the same reception.

Hundreds of scaly beasts milled before me. They pressed against Chagwar and his aides, muttering angrily. The Chief pushed them back. The Things grudgingly gave way, and cleared a small space in front of the platform where Chagwar stood.

They had bayoneted Springfields slung from their shoulders. Colts dangled from their belts. And under their arms, carried with very evident familiarity, were completely assembled Browning automatic rifles!

I cursed the conceit that had made me believe my Earthly brain so superior to theirs.

My left hand tingled with restored circulation and I wriggled my fingers. Then, remembering that terrible sword stroke, I glanced down. *My left hand was there!*


I was given no time to figure it out. But I did see a thin red streak that circled my wrist and noticed that the cut I had made upon my knuckle when on Earth, and that had neither bled nor healed, was not there!

Led by Chagwar, the Caplons

(Continued on page 140)



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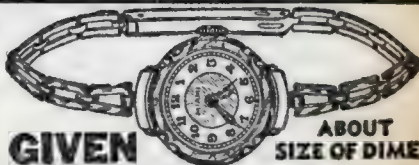
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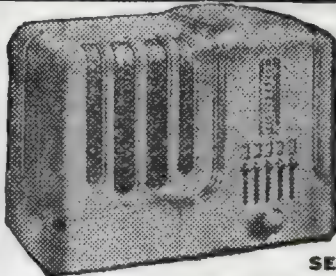
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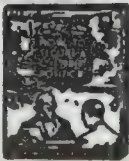
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swarmed about me. My bonds were loosened, and I was dragged out upon the floor.

I was not taken to the recessed stage. It was clear now that the Caplons had allowed me to handle my weapons that they might learn their various purposes. The rifle had taught them how to assemble the Browning and Colt so they had nothing more to learn.

They led me through the same door through which Verlanda had passed and conducted me down a wide passage built from the glowing metal I had seen in the large cave. This metal, I learned later, was called *platoid*, or power metal, and was in universal use all over the planet.

In its natural state, *platoid* was a radio-active metal similar to radium, discharging glowing rays. A very small mass, when placed within a strong steel shell and its total emanation allowed to escape through a tiny, controlled valve, would run the simple Belverian motors with such power that a shell the size of a basket ball could encase enough of the stuff to operate an automobile.

It was mined in large quantities by the Caplons, and was the source of all power upon the planet. And in the settled districts, night was turned into day by its restful glow.

Our noisy procession ended abruptly. We had traversed about five hundred yards of the corridor, during which time we had passed two small arches on the left, each closed by a pair of solid metal doors. We now stood before a third. The doors of this arch were a lattice-work of metal bars.

They slid into the wall. Followed by Chagwar and his two aides, I entered. The Supreme Caplon turned and spoke to the creatures in the passage, then pressed a button beside the arch. The lattice doors closed and heavy sheets of metal dropped down behind them.

The room had been prepared for my coming. My furniture was there; my clothing hung neatly in one corner. There were rugs on the floor and books scattered about; my typewriter rested upon the desk top. But there were no

weapons—or parts of weapons—anywhere in the room.

Chagwar motioned to the swivel chair in front of the desk and squatted on his haunches. His aides settled beside him, assuming that same primitive position of ease. I sat down.

"You have killed many Caplons, Don Winters." His enunciation was perfect, but he spoke slow, as though choosing each word with great care from a limited number at his disposal. "The punishment is death!"

I HAD EXPECTED the sentence; I was not greatly surprised to hear it pronounced in English by Chagwar. I merely asked, "How did you learn English?"

"From Verlanda. It is more expressive than our language; she thinks it will be adopted as the universal language of Belver."

"She is safe?"

"She is safe. She is not a prisoner; she is our guest. You, however, will be kept confined until you agree to our terms."

One of the aides spoke to Chagwar. The other joined in, both using the jargon I had heard before. Chagwar wagged his head.

"Balrig and Klugar say that most of the Caplons favor your death. But I believe you can help us greatly, and have managed to obtain the consent of the Caplon Supreme Council to seek your aid in destroying our Fairian oppressors."

"That I can never give!"

I spoke quickly, without thinking. Chagwar's eyes grew hard, and the looks of hatred upon the faces of Balrig and Klugar intensified. I knew then I should have tempered my refusal.

"You decide too quickly." He was curt. He said something in the same curt way to his aides, then addressed me again.

"Don Winters, Belver belongs to the

Caplons. The Fairians are from another world. They conquered us. But they treated us justly until the House of Pintor assumed control.

"The power of the Fairians decreased. Their population has dwindled to a mere fifty thousand pleasure-seeking women. And their culture that meant so much to our advancement is forgotten.

"We are their slaves! They have banished us to these metal caves. We are allowed upon Belver's surface only to work for them. And, that we might not become strong enough to rebel, they have kept our number below theirs by slaughter!

"Our children are inspected annually. All over the number allotted to us are put to death. It is only since Verlanda became Supreme Commander of the army, to which this inspection is entrusted, that we have been allowed to multiply.

"Verlanda refused to kill our infants. After the first year, she no longer examined our family life. And because of this, her life has so far been spared.

"But we want freedom! We want the health-giving light of our Heat Star, Ulser! The Fairians must be destroyed!

"We could not fight them with the sword. One Fairian can easily kill a dozen of us with that. But thanks to you and the *glesters*, we now have weapons of undreamed-of power. We can swoop down upon Fairia and annihilate its people before they know we are rebelling."

"But certainly, Chagwar," I interrupted, "all the Fairians do not share the belief of the Pintors. If you slaughter those who are not responsible, it will be murder."

"That is true." Chagwar looked thoughtful. "There is a movement now, led by Verlanda, of the House of Melwer, to unseat the Pintors. This new faction stands for a return to the old Fairian customs and the regaining of their lost scientific knowledge.

"But we cannot spare them! In time, they, too, would oppress us. It might be murder, Don Winters, but such murder is justified!"

"I cannot agree."

CHAGWAR'S summary rang true. The Caplons had sufficient grounds for rebelling, but I could not condone wholesale slaughter. I appealed to their reason.

"If the Pintors were overthrown, your troubles would be at an end. The Fairians would regain their lost science and forge ahead. You would advance with them. Why not throw in with the Melwer faction and work with them for the common good?"

Klugar thundered, "No!" and Chagwar silenced him with a stern glance.

"We," he said, "are not unaware of their inherently superior brains, Don Winters. If we leave any at all, they will grow in number and power. They will advance faster than our people. They will surpass us. Sooner or later, we shall again be subjugated. That shall never be. The Caplons shall always rule Belver!"

Chagwar stood. He rested his hand on the desk top and leaned toward me. There was a fanatical look in his eyes and his thick lips twitched nervously.

"Lead us, Don Winters! We do not need you in our war with the Fairians, but there may be other nations beyond the ring of mountains that surround our native country. They are no longer impassable. Our new air gliders will take us to those unexplored parts. You can help then; help us now. Become the Supreme Ruler of the Caplons!"

Balrig and Klugar moved to his side. Balrig addressed the Supreme Caplon in the jargon; Klugar turned to me.

"Do not be hasty, Don Winters. You will be given time. We want you. We need your knowledge. And to be Supreme Ruler of the Caplons is much preferred to"—he tapped the Browning he

carried—"this!"

I inclined my head. I was fully aware of the intended honor, even though it was accompanied by a threat. The creatures had offered their all. No matter what my reactions might be, I dared not treat that offer lightly.

"Gentlemen"—the word did not seem incongruous—"I understand your predicament and agree in part with your decision. But I cannot decide at once. If you will give me more time——"

"Days, if necessary." Chagwar's manner was more friendly. "You will be treated with all possible courtesy and we will not hurry you."

Balrig had stepped back and stood looking at the floor. Chagwar said, "Come, Balrig. We must go now." He stepped to the wall and pressed a button.

Balrig touched my arm as he walked by. "You are right, Don Winters," he whispered. Then he followed the others into the passage.

I spent a long five minutes clinging to the bars of the door, thinking. Then I turned back into the room and dropped wearily onto the day-bed. And, surprising as it sounds, I fell asleep.

I was awakened, hours later it seemed, by a metallic rattle. It took some few minutes to orient myself, then I swung my feet to the floor and sat on the edge of the day-bed, staring through the latticework that blocked the archway. Chagwar, Klugar, and Balrig stopped before my prison, opened the door and entered. Chagwar motioned me to my feet.

"We can wait no longer for your decision. Five hundred of our army are gathering in the Assembly Cave for an immediate attack upon the Fairians. The Council of Fifty will be there also. You will be accepted as our leader or the sentence of death carried out tonight!"

The unexpected cancelling of the time granted left me dumfounded. I had formed no plans. I knew so little about

conditions that I could make none.

"Such precipitous action is not fair, Chagwar, and may be regretted. I've not had time to consider fully my reward or punishment."

"Many things are unfair," Klugar said grimly. "The offering of a reward for betrayal is unfair. Bribes are often accepted. And the Fairian army has appeared outside the gates. We cannot afford to wait."

I THOUGHT of resisting. They were armed with Colts only. If I could get my hands on one, I might yet fight my way clear.

But it was already too late. Balrig and Klugar stepped behind me and Chagwar started for the corridor. I was hustled along.

Balrig spoke for the first time when we were walking down the passage.

"It might influence the Earth man's decision if he were to know how he was brought to our planet."

Chagwar stopped. Klugar loudly demanded that we proceed to the Assembly Cave at once. The Supreme Caplon overruled him. "There is time. Explain."

I wanted to know myself. "Balrig," I asked, "how do the Silver Spheres, or *glesters*, make it possible for you to see me when I am on Earth? How are they made?"

"They were made by the Fairians before they left Caltor—or Mars—from *dargun*, a highly sensitive metal peculiar to that planet."

"But how can they transmit sound, vision, and thought eight light-years?"

"By sympathetic atomic action. The atoms of *dargun* were very active, and could be speeded up—and their metal sensitized—by the intense heat of a Caltorian ray.

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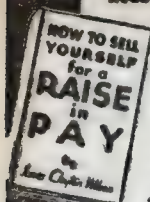
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taining their separate masses. Any atomic disturbance in one caused an equal change in the other, no matter how widely the two might be separated. Since the rays of light, sound, and thought cause such a disturbance, the principle of the *glesters* can be readily seen. They operate at infinite speed by affecting the already existant atomic wave-pattern which links the two.

"A Translator is used to re-create the light, sound, and thought from the recorded disturbances. Without this, nothing can be returned to its original state, no matter how great the disturbance in the *glester*. A Transmitter is used also, but it is merely an insulator.

"With our Transmitter closed, our *glester* receives, but is insulated against our own rays. You were returned to Earth by opening this Transmitter. The action of the atoms slowed exactly as your thought waves had increased them, and the atomic wave-patterns smoothed out to return you to your original state."

Well, that was that! I have little scientific knowledge and only vaguely understood what he had told me, but I nodded my head sagaciously.

Their marvelous scientific achievements, Chagwar informed me, had resulted from an intensive study of the things left in the caves by the ancient Fairians. The Caplons had been able to manufacture every article found, but for centuries had made nothing new until my property had been placed before them. I pounced upon that statement.

"Chagwar, you Caplons can make anything—but only when somebody else has made it first. You can copy—but you cannot invent. The Fairians and I have originality. When you destroy us, you destroy the future of your nation."

Balrig nodded slowly. "You are right, Don Winters."

Chagwar muttered something under his breath and looked away.

Something occurred to me. "Balrig, how was it my hand was restored after it had been severed here? When I returned to Earth, my hand was there, but dead—insensitive and immobile. When

I cut it, it didn't bleed."

Balrig laughed—the first real laugh I'd heard on this planet. "That was amusing to us. When you were transmitted back to your Earth, the *glesters* acted—partly by stored, previous impressions—to send *all* of you back, re-assembling you as you had originally been. Therefore, your hand was never really dead on Earth. You had seen it lopped from your wrist here, and that made so strong and deep an impression on your mind—hyper-excited anyway by the thought-action of the *glesters*—that when you awakened, your brain told your hand that it was dead. Through sheer force of will power you closed your veins to circulation and blocked your nerve centers. Any psychologist of repute will tell you that although such cases are rare, they are possible. When you returned here and found the hand whole here, too, the relief permitted its use."

"So I've been fool enough——"

"You have been a fool, Don Winters. But"—his tone lowered and he glanced uneasily at Chagwar and Klugar, who were still waiting restlessly near the door—"do not be one now!"

I GRASPED at the extended straw. "Do you mean there is a chance?"

"A very small one. Listen closely." His voice was so soft I had to lean forward and pretend I was examining the Translator to catch what he said.

"A great number of us realize we are only copyists and can never advance our state without assistance. We want to spare the Fairians, but we also want to be a free people. We must overthrow the House of Pintor!"

"Yes," I breathed. "That is clear. The faction led by Verlanda should elect a ruler; the men should be liberated and restored. And the Caplons should certainly be a free and independent nation."

"Then, Don Winters, accept the Cap-

lon leadership. If you do, we might possibly delay the attack. Watch out—Chagwar!"

The Supreme Caplon was coming toward us. I tapped ostentatiously on the Translator and whispered, "Thanks, Balrig. I'll remember this. Anything else?"

"About a fifth of the soldiers in the Assembly Cave will be ours. They will act if I give the word. Look for white caps." He turned about. "It is time, Chagwar?"

"It is time." The Supreme Caplon eyed us suspiciously. "Word was brought that the soldiers have assembled and the Council of Fifty is ready. We must hurry."

He led the way to the corridor and Balrig, looking relieved, again fell in beside me. A few minutes later we entered the cave.

It was filled with Caplons. The detachment from the army, fully equipped and five hundred strong, stood in front of the porches. In the middle of the floor the Council of Fifty squatted on their haunches about twenty paces in front of the small platform beneath the Silver Sphere.

Verlanda stood at its very edge, alone. Her chin was held high. Her eyes sparkled fearlessly, and her hand rested upon the hilt of her sword, a puny weapon when compared with the arms now in the hands of the Caplons.

Chagwar stepped upon the platform and carefully lowered his body into the chair. Balrig and Klugar halted me at Verlanda's side, Balrig contriving to keep Klugar as far from us as possible.

The girl smiled when I greeted her, but shook her head slightly. "It is useless, Don Winters," she murmured. "We must all die. But even so, I am glad we met."

Her words thrilled me. I said, "Verlanda, you mean——" and stepped nearer. Balrig grabbed my arm and pulled me back.

"Silence!" Chagwar roared from the platform. He rose majestically to his feet and let his gaze travel about the room. A hush settled over the crowd. Chagwar threw back his head and broke into the Belverian jargon.

His speech was long. Several times Balrig's fingers tightened painfully upon my arm. Once Verlanda leaned toward me and whispered, "He is inciting the Caplons to immediate rebellion. He wants us all to be killed tonight!"

Roars of approval greeted the termination of Chagwar's speech. The soldiers brandished weapons and demanded action. But I noticed that, scattered through their ranks, were some few who cheered little, or cheered in a decidedly halfhearted manner. Balrig's men. My possible allies.

About a quarter of the Council of Fifty showed little enthusiasm. More friends. Our case was not entirely hopeless. My eyes turned to the recessed stage along the right wall where my possessions had once been on display.

EVERYTHING had been removed. Everything but a few bulky bags. They were similar to the ones I had used for—they *were* the ones! One had become untied. Before its yawning mouth lay three sticks of dynamite!

The Caplons were still cheering. Even Klugar's vigilance had relaxed. I pressed close to the girl.

"Verlanda, listen! Those bags contain dynamite—a powerful explosive. I don't know why they were left. Possibly Chagwar couldn't figure them out and wanted me to show him." She nodded, but I did not let her talk.

"Never mind; they're there. You remember the door we saw standing open in the wall beyond the arch? The tiny, sealed room there?" Her head bowed again. "When I give the signal, you must somehow get those bags there. Close the door partly, but leave one bag in view. And be careful. Handle each

bag as though it were a soap bubble!"

I was jerked back. Klugar's face leered into mine.

"What about those bags? Why must they be handled like soap bubbles? Are they weapons?"

I tried to break loose, but couldn't. Several of the Council noticed our struggle. One of them started toward us. Klugar shouted.

"Chagwar! Those ba——"

I did not know I had hit him until I saw him scrambling to his feet. He forgot his guns. He drew his sword and leaped upon me. I was unarmed.

I dropped flat, rolled to one side, and jumped up again. Klugar was on the floor. Verlanda stood above him, sword in hand. He was dead.

"For you, Don!" She spun about and ran to the recessed stage.

"Balrig," I shouted. "Send three men to help Verlanda!" I hurried to his side, Klugar's Colt clutched in my hand.

Struggling figures filled the chamber. Some of the Council rushed at Balrig and me with drawn swords. He gave the signal, and white caps were drawn from pouches and jammed upon scaly brows. The army churned in terrible, bloody battle.

I saw Verlanda open a way through the press of bodies with her flying sword. She worked swiftly, two of Balrig's men guarding her, while the third helped carry bags. In about two minutes she had half the bags placed. I shouted. She ran to my side.

"The bags are piled within the small guardhouse built into the outer wall. The door is partly open, and one bag lies in the crevice. It can be seen from here," she said.

"Great, Verlanda! Run as fast as you can to the raised platform beneath the Silver Sphere. And *stay there!*"

She hesitated, eyed the fierce struggle longingly. I shouted, "Go!" She wheeled about and dashed across the floor.

I bayoneted my way to Balrig's side. "Balrig! I have explosive planted near by. Hold the enemy in this corner until you hear me fire one shot. Then have all White Caps dash for Chagwar's little platform. Don't ask questions. Do as I say!"

He did not see me. His sword rose and fell rhythmically. But he answered. "I understand, Don Winters. We shall come when you signal."

I sped across the floor to the wall opposite from where the battle was raging. I picked up a Colt and fired a single shot into the air. Then I dropped to one knee, sighted the Browning at the dynamite, and waited.

Balrig shouted. Instantly white-capped Caplons broke away from the hand-to-hand struggle and dashed across the floor.

CHAGWAR'S force was amazed. They stood undecided—gazed in bewilderment at the fleeing figures. Then Chagwar himself saw me. He shouted hoarsely and raced in pursuit of Balrig's followers.

That saved about half his men from immediate destruction. When the last White Cap had crossed the imaginary line I had drawn from my position to the opposite wall, I pressed the trigger. The Browning coughed.

An ear-shattering roar filled the chamber. Concussion lifted me and dashed me against the wall. A large piece of luminous *platoid* shot past my head. Powder smoke filled the chamber and blinded me—brought on spasms of coughing.

Something struck my forehead. The Browning dropped from my hands and I slid to the floor. I saw Verlanda running toward me, then blood filled my eyes.

Cheers came from the direction of the demolished outer wall. I brushed away the blood and peered groggily toward the large arch. There, far across the

room, stood Verlanda, sword in hand! Another Verlanda dashed to her side! Then one more, and yet another! Then, scores of Verlandas bounded into the room, swarmed about Chagwar's little band, pressed them back against the porches and held them there with a ring of gleaming steel! And I, like a fool, fainted away!

I came to on the little platform, my head in Verlanda's—the *real* Verlanda's—lap. She was crying, wiping the blood from my face. And before us, smiling with very evident enjoyment, stood several hundred of the fairest of Fairia's picturesque army!

Balrig bent over me, helped me to my feet. Verlanda faced her army, I heard her talking rapidly to them in the jargon while Balrig helped me to the ornate chair. I sank upon its soft cushions gratefully.

Somebody shouted, "Don Winters, Supreme Caplon!"

Cheers broke forth. Verlanda screamed, "No!" and held up both arms, "Don Winters, Supreme Fairian!"

More cheers—louder. Verlanda's army led them. I hung onto the chair, only half understanding what was taking place. My head had a grinding ache and the noise made it worse. Every time somebody hoisted my arm it felt much worse. Balrig leaped to my side.

"Not Supreme Caplon," he shouted. "Not Supreme Fairian! But Don Winters, Supreme *Belverian*!"

It was minutes before the bedlam subsided. Then a Caplon ran into the room from the passageway that led to my former prison.

"The Supreme Caplon? Where is he?"

Someone answered, "Don Winters!"

But I at last made myself heard. I pointed my finger. "There!" I cried. "The hero of the rebellion! Balrig, Supreme Caplon!"

The demonstration began anew. The messenger made his way to the platform

and spoke loudly. "Balrig, the Translator was demolished by the explosion. What are we to do?"

Balrig looked at me, then turned away quickly. "We've got to repair it, Valdon!"

"Impossible! It is not broken—it is destroyed! The Transmitter is all right. We can send back to Earth through our *glester*—but we shall never again be able to bring anything from there to Belver!"

There was a violent movement among the Caplons, then a bloody mass of flesh staggered from their ranks. Chagwar, dying on his feet.

"Supreme Caplon! Supreme Belverian!" He was bellowing, crazed with

pain from mortal wounds. *Supreme Traitor!* Belver belongs to us, Don Winters!"

He staggered another step or two, suddenly threw himself forward and his hand closed upon a small lever at the edge of the platform.

"Back! The Translator is destroyed. We want no Earth men on Belver!" He jerked the lever.

Balrig leaped over my feet and swung his sword. I saw Chagwar's head lopped from his body—saw it roll off the platform and strike the floor as Verlanda ran toward me. Then I was blinded by a dazzling flash, felt an instant of intense cold, and awoke on the day-bed in my cabin upon this Earth!

BOOK REVIEW

THE ORIGIN OF LIFE, by A. I. Oparin, Associate Director, Biochemical Institute, U.S.S.R. Academy of Science. Translated by S. Morgulis, Professor of Biochemistry, University of Nebraska. New York: Macmillan, 1938, 270 pp., \$2.75.

In this excellent book, Professor Oparin first gives a brief history of popular and learned beliefs about the origin of life—including such oddities as the belief that mice could be generated spontaneously from wheat kernels. (Such beliefs at one time were part of the dogma of the Christian Church.) He tells how such ideas were exploded by Spallanzani, Pasteur, and others; summarizes contemporary theories about the origin of life; and describes his conception of how the elements existing on the Earth's surface could have combined into discrete organisms.

He believes that the atmosphere, after the Earth had cooled, consisted mainly of water-vapor, ammonia, and hydrocarbons such as methane. Free oxygen, free nitrogen, and CO₂ were absent. This is consistent with what is known about Jupiter, whose atmosphere and hydrosphere are believed to consist of ammonia and hydrocarbons. The oceans, then, instead of being solutions of *inorganic* salts as they are now, were soupy solutions of *inorganic* compounds.

The author describes how simple organic substances can, given sufficient time, form an enormous variety of complex compounds by simple contact in solution, including the radicals of which protoplasm is built up. Asymmetrical molecules, which are characteristic of living matter, were produced by the action of partly polarized light from the sky. The complex organic molecules united to form colloidal particles, which were free to continue their evolution, as there were no teeming bacteria, as there are now, to break them down into simple substances again. The acquisition of enzymes by these particles enormously speeded up their chemical reactions, which theretofore had been so slow and haphazard that the particles would not be recognized as "living." The earliest organisms evolved in this manner used chemical reactions of comparatively low energy in their metabolism. A few such types survive—the anaerobic bacteria—but they were largely crowded out by later organisms using the more powerful and efficient oxidation-reduction reactions, whose activity released the vast quantities of O₂ and CO₂ in our atmosphere today.

The recent discovery of great amounts of CO₂ in the atmosphere of Venus raises an interesting question: is Oparin wrong about the primitive atmosphere of the Earth, or did Venus follow a different course of planetary evolution, or has the Evening Star gotten to the stage where it has CO₂-producing organisms, but no free-oxygen producers?

This book is a serious work, and not a mere popularization. It is outstanding for the clarity, logic, and order of its presentation, and would be of interest to any biologically inclined science-fiction fan. High-school chemistry and a bit of organic chemistry are needed.

L. S. de C.

IN TIMES TO COME

The times to come look good, I think. There's always the dissatisfaction that nothing is ever as good as you'd like it to be, but **Astounding** has, by the tone of your letters, pleased you more each issue. It's not as good yet as it's going to be. It takes time to find just what you want; it takes time to get those wants clear to authors, and get stories and viewpoints in accord with those desires. But every month there is a tendency toward the things you seem to want.

Next month brings a major change—an editorial *mutant* development. You've noticed the new contents page? Watch next month for that change of cover lettering I've promised you. It's being made in response to the letters of suggestions I've received. You complained about the advertisements in the past. Check on those this month—and in months to come! There are more changes yet to be made.

I very genuinely want suggestions; that's shown by the fact that I have taken your proposals and—wherever practicable, and suggested by a considerable group—acted on them. Your selection of best stories of each month defines a trend on which I am acting in cooperation with the authors. Further suggestions and analysis results will equally be used in making the **Astoundings** yet to come.

Next month's issue is going to be another true all-star issue. There will be stories by M. Schere, L. Sprague de Camp, Warner Van Lorne, Kent Casey, and the conclusion of **Simultaneous Worlds** by Nat Schachner. Arthur Burk's back—and with Josh McNab and the "Arachne" in a story better even than **Hell Ship**.

And one story I am particularly interested in; one I will particularly want comments on. It's a novelette that is, I think, far above average in quality—**A Matter of Form** by H. L. Gold, a name new to science-fiction, but a man whose work shows experience and capability. **A Matter of Form** has a plot that is not fundamentally new, but one worked out with a degree of care and a close-knit logic unusual in the field.

This month's **Analytical Laboratory** shows you liked the humanness of Ray Cummings' robot, X1-2-200. Lester del Rey—who wrote that very human story **The Faithful**—returns with a queer and rather unhappy little story of a robot who—not "that"—was too human. I'll want comment on that, too.

The Editor.

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THE ANALYTICAL LABORATORY

I am interested in the divergence of opinion on two stories in particular—**Orbit XXIII-H** and **Double! Double!** The letters in **Brass Tacks** show the reasons both for and against each of those stories. But the final tabulation is as below:

Treasure Asteroid Manly Wade Wellman

1. Tied:
- The Robots Return Robert Moore Williams
2. XI-2-200 Ray Cummings
3. The Tramp L. Ron Hubbard
4. The Trapper Arthur J. Burks
5. Double! Double! Eddin Clark

Orbit XXIII-H, by Robert Willey, which just missed fifth place, still got a score only 4% lower than **Double! Double!**—and that rated 86% of the top comment.

Some further results on the Research Data sheet of the August **Astounding** are of interest. Due to the fact that I had to ask for prompt replies in order to have the material in time for the October issue, nearly all replies were from the United States. Similar reports from points as well-scattered as Kandy and Johannesburg, Australia and Vienna, however, came later and added interest.

Under occupations, the various specializations among engineers predominated, of course. Mining . . . Civil . . . Electrical . . . Mechanical . . . Radio . . . Chemical. We could, evidently, set up and operate a radio station, complete with radio engineers, announcers, executives, actors, script-writers and orchestra. The advertising department is also represented among our readers.

But the largest single occupation-group seems to be the chemistry department, particularly those interested in research. Some of our authors answered with their occupations. Willy Ley, of course, is a rocket engineer. L. Sprague de Camp is a patent expert. John D. Clark with a pharmaceutical chemical house, in the research division. Eddin Clark—perhaps you gathered it from his story—is a biochemist. Arthur McCann is in medicine—specializing at present in endocrinology.

In fact, it looks like a fairly complete cross-section of American technical employment! The Editor.



"Extreme dizziness" shows commendable restraint!

Dear Mr. Campbell:

For some time now I have been considering Ross Rocklynne's story *The Men and the Mirror* in the July issue, but only the other night did I actually sit down with the figures given by Rocklynne (incidentally, that's the kind of story I appreciate . . . the author gives some actual data so that those who are interested can play around with a little arithmetic if they so desire). The results turned out to be quite amusing and interesting, to me at least, and they may be equally so to other readers.

As Rocklynne states, the two heroes (for they are certainly that, as it develops) constitute an isolated system, so that the various conservation laws must be obeyed, particularly the conservation of energy, of momentum and of angular momentum. The gentlemen, by their own exertions and manipulations, got themselves circling about each other at the ends of their two hundred foot rope so that, at the proper moment, when the rope was cut one flew up over the edge and the other received an equal impulse in the opposite direction to carry him over the opposite edge after traversing the mirror.

Momentum was conserved, since the two men flew apart in opposite directions, the momentum of one being exactly equal and opposite to that of the other. That presents no difficulty.

But angular momentum must also be conserved. The system of two men swinging in a circle at the ends of the rope represents considerable angular momentum, and the system must therefore contain in addition a precisely equal and opposite amount of angular momentum so that the total adds to zero. The only conceivable way this can be done seems to be with each man revolving on his own axis in a direction opposite to that of their orbital motion. In other words, if the two men are swinging clockwise on the ends of the rope, they must also be spinning counter-clockwise each on his own longitudinal axis. Now they accomplished this must be left to the imagination, aside from Rocklynne's description, in which he has them spinning each other like jo-jos (we call them yo-yo's). He goes a step too far, however, in having them stop their spinning each on his own axis, since if they did that, their orbital motion on the ends of the rope must also necessarily have ceased.

Angular momentum is defined as the product

of moment of inertia and angular velocity, just as linear momentum is the product of mass (or inertia) and linear velocity. So the moment of inertia of each man on his 100 foot radius, which we will call l , multiplied by his angular velocity, W , (the revolutions per minute, or radians per second traversed in their swinging about each other) must be equal to the moment of inertia of each man about his own longitudinal axis, i , multiplied by his angular velocity around that axis, w , or how fast he is spinning:

$$lW = iw.$$

Now we know that when the rope was cut, the man had enough kinetic energy to throw him up 230 ft. to the rim of the mirror and 50 ft. beyond, or 280 ft., against the gravity of that world, 12 ft./sec². We shall assume for simplicity that each man weighs 100 kilos, or 220 lbs., slightly heavy, to be sure, except that they are in space suits. So the gentleman must have had kinetic energy of $220 \times 280 \times 12 = 740,000$ foot pounds, which we shall immediately transform to civilized metric units, 31,100 joules, or 3.11×10^{11} ergs. Thus his kinetic energy in his circular motion on the end of the rope is

$$\frac{1}{2} l W^2 = 3.11 \times 10^{11} \text{ ergs.}$$

I is simply the mass of the man, 100,000 grams, times the square of his radius, 100 feet or 3048 centimeters, or

$$I = 10^5 \times 3048^2 = 9.29 \times 10^{11} \text{ c.g.s. units.}$$

So we can solve for the angular velocity,

$$W = \sqrt{668} = .817 \text{ radians per second, which is about 7.81 revolutions per minute. The angular momentum of each man about the center of the rope is then}$$

$$lW = 9.29 \times 10^{11} \times .817 = 7.59 \times 10^{11} \text{ c.g.s. units} = iw.$$

So if we knew the moment of inertia of a man about his longitudinal axis, i , we could figure how fast he is spinning on that axis, w . And that leads to the major difficulty—what is the moment of inertia of a man about his longitudinal axis? Needless to say, the equation of a man's surface would be pretty complicated in whatever coordinate system one wished to choose. But we can get an approximate answer by manufacturing several "men" with more regular and more easily handled shapes, and assume that the i of the ordinary 100 kilo man is around 1.45×10^7 c.g.s. units. The rest is duck soup:

$$i w = 1.45 \times 10^7 w = 7.59 \times 10^{11}$$

$w = 5.23 \times 10^4$ radians per second, which is just about 500,000 revolutions per minute. And so, if angular momentum is to be conserved, in order to build up a sufficient speed at the ends

of the rope to throw the gentleman out of the mirror, each must revolve on his own axis some half a million revolutions per minute. It would take an agility nothing short of phenomenal to cut the rope at the correct time under such trying circumstances. And we do not wonder that a leg was broken in the fall to the ground, spinning at such an exorbitant rate. We are astonished only that the other leg was not worn down to a nub.

But that is not all! This spinning of the men about their own axes also represents kinetic energy, just as does their spinning about the center of the rope. How much? Simply

$$\frac{1}{2} I \omega^2 = 1.45 \times 10^7 \times 5.23^2 \times 10^6 = 1.99 \times 10^{10} \text{ ergs.}$$

By conservation of energy, this must have been formed at the expense of the chemical energy of their bodies. Now an erg is not very much energy, but still the above number is quite large. This energy of spinning was imparted to themselves by their own muscular exertions during a period of less than 15 minutes, or 900 seconds. That means that each man must have been generating 1.99×10^{10} ergs per second during that

900

15 minutes, which represents a power of 2.21×10^6 joules per second, or 2210 kilowatts. For those who prefer the horse and buggy era, that is close to 3000 horsepower.

Saddest of all to the heroes must be the considering of their adventure in retrospect with the realization that if, instead of making all their acrobatic gyrations, they had merely pushed each other forcibly apart at the peak of their twenty-third trip across the mirror, projecting the one hero up 280 feet and the other one back over the other rim, if they could exert their gigantic push on each other over a period of 1 second, which does not seem too unreasonable, each man would only have to generate 3.11×10^{11} ergs in one second, which is 31 KW, or a little over 40 horsepower. So they could have accomplished the same results with only about one-seventieth the power applied over one second instead of 15 minutes, and with only .00156% the energy. That would have left them much less exhausted, not to mention the nausea from extreme dizziness.

And if they could devise some way of storing their energy, building it up over a period of 15 minutes but not building up the prohibitive rotational energy at the same time, they would only have needed $31 = .0844$ KW or .0461 horsepower,

900

which would be possible even for an ordinary man. It would be equivalent to climbing 105 feet, say up the stairway of an Earthly ten story building, in fifteen minutes.

From the above calculations we may conclude that although Rocklyne's method is physically quite possible, at least as far as the laws of mechanics are concerned, it would not be gymnastically possible for any but the most super of science-fiction heroes, those of the class which tends more to physical than mental agility.

But by all means do not take this as a condemnation of the story. I considered it quite good when I read it, and I still consider it so. It has provided not only the pleasure of reading, but added to that pleasure by presenting a little problem. By all means have more of the type.—Robert D. Swisher, 15 Ledyard Road, Winchester, Mass.

The leads shown on the cover were temporary work used in the repairs. And since we don't know what kind of current is the "right kind," we can only guess at its functioning.

Dear Mr. Campbell:

Didn't Burks go a little haywire with his power set-up? The way that coil is wound it wouldn't pick up much of any kind of induction from the "thread." Too, if the coil is to turn—

as Burks says it does—the leads should be taken off by means of collector-rings.

But why rotate the coil at all? Wouldn't a fixed coil work just as well? You know a solenoid doesn't have to turn to travel up or down an iron core or another solenoid of the right polarity. If his "thread" or track of gravitational lines of force was securely anchored to Mars, and was strong enough and, of course, supposing the "right kind" of current could be generated, I believe it would be more practical—at least more plausible—to use a stationary coil. In that case, the "thread" would act as the iron core and those electromotive forces—they would be whirling even though the coil was stationary in relation to the ship—would move up the thread much the same as a nut moved on a thread when it is turned.

That would do away with one 40,000 H.P. motor that was capable of "revving up to 35,000." I'd hate to be a passenger on that ship. And I don't believe that Scotchman is much of an engineer. Some of the small, 5 H.P., I believe, impulse steam-turbines do turn around 30,000 per minute, but the rotor is of small diameter, therefore the peripheral speed is not so great. But for the armature of a forty thousand horsepower D.C. motor to turn that fast—Well, I just can't imagine it. I believe it would throw pieces of itself completely out of the galaxy. Of course, Burks could have invented an exceptionally strong metal, and some kind of super-glu to stick the windings in the slots.

He might use gyroscopes to stabilize the thrust of his motor. But what would he use to stabilize the kick of that forty thousand horsepower field? I believe a stationary coil would be better, and even then there would have to be something to stabilize the fields of the generators and the coil windings.—W. E. Eubank, Andrews, N. C.

"Death to Giant Ants!"

Dear Mr. Campbell:

As far as science-fiction goes, I am a radical. I like my plots wild and woolly with no holds barred and am a deadly enemy of the "down-to-earth" sect. But—I draw the line on ideas which fly directly in the face of proven scientific facts.

Perhaps the most common offense of this nature concerns physical conditions on other planets (particularly Mars). Authors will insist on giving Mars an atmosphere capable of supporting Earthly life without a spacesuit in spite of the fact that it is well known that Martian air is far too thin to support life as we know it. (The last story of this nature was Clifford D. Simak's "Rule 18".)

However, I note with pleasure that the tendency in Astounding is towards realism in such matters. Mars is given its proper atmosphere in Fearn's "Red Heritage" and the ammonia-methane atmosphere of Jupiter is faithfully drawn in such stories as Ayre's "Penal Planet" and Rocklyne's "Jupiter Trap".

Now the purpose of my letter is to urge realism in another matter. It is time, I think, to discard the idea of the "giant insect" menace, which appeared last in Williamson's excellent serial, "Legion of Time". The idea of a giant insect is unscientific insofar as its organic structure is entirely unsuited to a size such as man's. I doubt if even Evolution in its customary eons could produce a "hypertrophied ant", let alone Man's artificial methods.

Take "Rule of the Bee" by Manly Wade Wellman which appeared in the October, 1937 issue. This, in which a scientist creates a giant bee the size of an elephant which at once becomes a menace to Mankind, is a typical story of this nature. Now, just why is this impossible in a really scientific sense? My reasons follow.

1) Of course it is obvious at once that no giant insect would be able to use wings. With the Earth's gravity and the density of the air being what it is, an albatross or a condor is about the largest organism capable of flying

(and an albatross can't fly on a full stomach). However, this objection is not very important as most of the time the giant insects are either ants or termites which are wingless anyway, so we'll proceed to points more germane to the issue.

2) Then there's the question of support. I think everyone has heard of the "square and cube" rule. If you haven't, the explanation is very simple. Take an ordinary ant and expand it a hundred times in all dimensions by some hormone, for instance (which is conservative when compared to "Rule of the Bee" and many other stories). What happens? The volume, consequently the weight, increases as the cube of the increase in a linear dimension. In other words, the ant now weighs 1,000,000 times what it did before. The supporting power of the insect's legs, however, depend upon the size of the cross-section area of the leg, which increases only as the square of the increase in linear dimensions. In other words, the supporting power of the ant's legs have now increased only 10,000 times, while supporting a weight that increased 1,000,000 times. Could that insect stand up? The answer, my friends, is a loud and lusty "NO!"

But evolution is capable of anything (practically) and we'll suppose that the insect can adapt itself if the increase in size is spread over many generations. You see, I'm being liberal. After all, 80 foot Brontosaurus have existed (but their legs were like tree-trunks and even so they had to stay in water and let buoyancy do most of the work). Still, there is a more serious objection.

3) Insects have a very efficient respiratory system which works if you are the size of an insect. It consists of a ramification of tiny air-tubes called "trachea" which reach every cell of the insect's body, thus doing the work of both the lungs and the blood system at once. It works very well, as I said, for tiny insects. But now expand the insect a hundred times as before. The volume increases 1,000,000 times, and as the size of the individual cell remains practically the same, the number of cells in the insect's body increases 1,000,000 times. It is true that the capacity of the trachea (the amount of the air they can hold) increases to a like degree—but the absorption of air depends upon the extent of surface exposed by the trachea and that increases only as the square of the linear dimensions—10,000 times. It is easily seen, then, that a giant insect would not waste too much time in suffocating.

We'll suppose evolution gets around this after a superhuman effort by gradually wrinkling and convoluting the walls of the trachea so as to increase the surface area in the proper proportion. Well, it's still not through. The total number of cells that immediately adjoin the trachea, and that can absorb the air from it, increase as the square of the size—10,000 times. The total number of cells increase 1,000,000 times. Hence, the trachea can supply only one percent of the cells no matter what size the inner surface is. Evolution now has the job of increasing the number of trachea one hundred times. I think that you'll agree with me that evolution will give up the whole thing as a bad job. After all, the insects are doing all right as they are. And, of course, to suppose that man can do it in the space of a few years, or even a few thousand years, is laughable.

However, for the sake of argument, we'll say that the impossible is done and the insects of the world are now the size of horses. Will they be a menace? Will they wipe Mankind off the face of the Earth? They will not! As a matter of fact, I'd give odds that they wouldn't last a decade.

That sounds like nonsense, doesn't it? But wait. First of all, the insects will lose what is their greatest weapon at present—their numbers. (The number of species of insects are greater than the number of species of all other animals combined). That I think will be readily granted. There's the food supply to be considered, and also the naturally murderous tendencies of most insects. Left to themselves, the Earth would surely not support more than a few million (any more than she would support more than a few million men, had we not reached our present stage of industrial and scientific development).

But even these few million, you think, would be enough to finish men? Why? It is true an ant is armor-plated, but I think we have weapons



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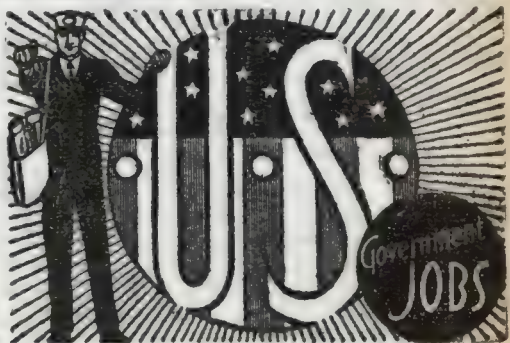
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of defense that can better that. I'll lay my money on steel against chiton any day. "But look at the ferocious mandibles of a giant ant; they could snap you in two just like that." Thanks, I'll stick to my tommy gun and my bombs and my tanks. In short, an armed man is a match for any giant insect you can imagine, and a properly equipped army would simply massacre any army of insects, however large. And remember, we, or at least some of us, are equipped with brains—a thing instinct-ridden insects have not.

Of course, there's still the old wheeze about the enormous relative strength, jumping power, ferocity, etc., etc., of ants, cockroaches, beetles, and what have you. The Sunday Supplement's tell you that if you were as strong for your size as a louse, you could pull a wagon containing seventeen Fords, two Chevrolets, and one second-hand Packard. Also you could jump fifty-five yards and two and a quarter feet. Likewise you could lift Boulder Dam with one hand—if you were only as strong as an insect in proportion to your size.

An so, naturally, it is assumed that an insect your size would be able to do all this. However, a little thought will convince anyone that a man-sized insect will in all probabilities be no stronger than a man, if as strong.

It is possible to build small, model railroads that, in proportion to their size, can outrace the speediest streamliner, and suffer collisions that would demolish an ordinary train with scarcely a scratch. Why can't its properties be carried over into the large sizes? The reason it can't is because of something analogous to the economist's "Law of Diminishing Returns".

Take an airplane, train, animal—what you will. Double his size and his power; will his strength and speed likewise double? Not on your life! It will increase certainly; but not double. And as you keep on increasing, the strength or speed will likewise keep on increasing, but proportionately less and less until finally there is no sense in increasing the size any longer.

Take the horsepower of Howard Hughes' globe-circling plane. It was eleven times that of the old "Spirit of St. Louis", yet it negotiated the crossing to Paris in only half the time.

It is obvious, then, what will happen to the insect's enormous strength when he becomes the size of a man or a horse. Man is an abnormally weak animal, so he is perhaps an unfair basis of comparison, but I am sure that a giant insect would never be as strong as a horse. For, after all, the vertebrate form of life is certainly the most efficient Earth has yet seen.

Well, now I've got all that off my chest and I hope I've done my bit toward making the "giant insect menace" a thing of the past. After all, it IS unscientific—Isaac Asimov, 174 Windsor Place, Brooklyn, New York.

BRASS TACKS

Such letters do help. Thank you, and the many, many others whose letters would, this month, have overflowed the entire magazine.

Dear Mr. Campbell:

I am enclosing this research data sheet so that you may better understand what the average reader likes. I have been reading science-fiction since 1928; but, while the majority of science-fiction fans probably have not been reading this type of literature for so long a time, I consider myself an average reader in tastes.

I value "Galactic Patrol" and E. E. Smith's other gems for their fast-moving drama, their profound science, and for their verisimilitude. The name Lovecraft always brings to my mind his beautiful word-pictures. Other authors have their definite writing characteristics which I recognize and appreciate.

The stories can't contain too much science for me, and yet I like, as well, a story that strikes

a balance between "dry" science and fiction. Fantasy must be extremely well written before I can enjoy it. The science articles are always welcome.

Of the stories in this month's magazine, I thought Don Stuart's "Who Goes There?" to be the best. Suspense was the strong point of the story, yet it didn't keep me that way too long. I always appreciate a happy ending, with the menace vanquished and the secrets of science saved for the benefit of mankind. "Hell Ship" followed a close second, but I didn't like the title. It was written in a realistic manner, but it didn't have quite the "Power" that was contained in "Who Goes There?"

Power, in a story, is, to me, that element of it that, through the personification of the characters, tends to show the innate strength of body, mind and spirit that is in man. To illustrate, "Galactic Patrol" was a powerful story because Kimball Kinnison exemplified the above-mentioned virtues. "Who Goes There?" showed these things in the men who finally overcame the monster. The character Josh McNab also exemplified these virtues, but to a lesser extent.

I don't know if you have noticed it, but the covers for the issues of June and July have been printed incorrectly. The different colors don't coincide. Man in the June issue was all right, but the colors in the foreground were off about 1/16th inch. The July cover is off to 3/32" or 1/8". If that ever happens on another astronomical cover plate, I'll scream. However, the cover for August didn't show this defect.

This is the first letter I have ever written to any publication, and I probably never would have written it, but I realized that I would be helping you in some small way. If I have, then I am glad, for I have helped your magazine and science-fiction too—Robert V. Woodings, 108 West 29th Street, Lorain, Ohio.

But we do allow for ties when they arise.

Dear Editor:

After unavoidably missing six issues of Astounding, I find them once again available on the local news stands, beginning with the July issue. That issue did not impress me greatly, but after reading the August issue I feel that I must comment upon it.

I especially enjoyed "Who Goes There?" It was a sort of melange of "The Living Death", Lovecraft's "Mountains of Madness" and the well-known werewolf tales. However, it was written in such a style that it was altogether engrossing, interesting and new. John, if you can get around to it, you may pat Don on the back for me.

The covers of both July and August issues were good. I will be interested to see what sort of job Thomson does on the September cover—his interiors are not especially commendable. And speaking of inside illustrations: Wesso is far and away superior to all the others. Dold is good and Binder is fair. The illustration for "Eviction by Isotherm" is definitely poor.

As for your *Analytical Laboratory*: I do not think it is absolutely fair to rate the stories 1, 2, 3, 4, etc. It does not allow for ties or for the case wherein two or more stories are equally as good (or poor). For instance, if you tried to rate the best ten science-fiction stories that have been published, in order, you would immediately have a problem on your hands. Would it not be best, in such a case, to rate them all as classics?

You ask, in the August issue, for the reader's definition of *power* in a story. My primary requisite for a better story would be: Is it exceptionally well-written? Does it have an atmosphere? The classification does not matter so much, for I enjoyed equally, and beyond my power to express, "The Moon Pool", the Skylark stories, your own Arcot, Wade, etc., series, and, to mention some more recent works: most of Weinbaum's and Don Stuart's stories, "Finality Unlimited", "Incredible Invasion", and of course, "Galactic Patrol".

The science articles: The two articles in the August issue were in my opinion, worth nothing—a mere rehash of the obvious. The two articles in the July issue were interesting, and the article on the evolution of language was a subject I have long wished to see written.

Your expanding circulation is bringing in many new readers (whom we welcome) whose imagination is not so well developed as yet, compared to we readers who have been reading science-fiction since it began. For them you must publish stories with a standardized (more or less) science-background, and with the type of action and story for which they are looking. We, also, enjoy such stories when they are well written, as was "Hell Ship", purely for their entertainment value. Science-fiction provides an almost unlimited scope and background for this type of story, and they need never become trite or standardized, as have other fields of popular fiction. Nevertheless, do not entirely forget us! The other readers will grow to an enjoyment of the type of material which we like. We constantly crave something new—something just a little beyond the superscience of "Galactic Patrol"; just a little beyond the metaphysics of Lovecraft and C. A. Smith, and more, ever more, of the *human*, spellbinding atmosphere of "Who Goes There?"

Best wishes to all of you, until next issue—L. M. Jensen, Box 35, Cowley, Wyoming.

The cells do live a few hours—but the growth is microscopic. And—watch that lettering!

Dear Mr. Campbell:

Here goes another monthly letter. I think that you are making every effort to please the majority. You seem to be trying every possible method. It's something that, to my knowledge, has never happened before in science-fiction, or any other field of writing for that matter.

Your latest example of the above is that little coupon on page 124. You'll find mine enclosed. Now for my comments on the August issue:

The cover is pretty good, but I'll still take Brown. Wesso's too inconsistent. Once—the March issue—he was better than Howard V., and the June equalled him, but he's usually kind of bum. Like to see how Thomson does next month.

Favorite story was "Who Goes There?" Now, there was a swell puzzle! I tried to guess who the H's and M's were all through the darn thing. Once I was so curious that I sneaked a peek on the last couple of pages to find out whether Copper or Garry was an M—but I saved my conscience, for I couldn't find out!

Don A. Stuart slipped a bit on page 70. He said, "A man's muscle cells live many hours after he has died. Just because they live, and a few things like hair and fingernail cells still live, you wouldn't accuse a corpse of being a Zombie, or something."

Now I may be wrong, but isn't it now a proven fact that the hair and fingernails do not grow after death, according to a popular superstition? I stand to be corrected.

Second place story was "Hell Ship". Nothing remarkable about this story of Burks—not about the story itself, that is. But Burks has given us one of the most realistic characters of all—s-f. Meaning of course, Josh McNab. More power to Burks—and McNab!

Third was "The Terrible Sense". I like humor in my science-fiction, and I got it in this.

All of the last places, third back through fifth, were close, with very little difference. But I've decided on "Asteroid Pirates" fourth and "Jason Comes Home" fifth.

I buy the magazine for the stories and rarely monkey with the articles, so I haven't read those in this month's magazine.

Ye gods! Why can't you find a binding that suits you and stick to it? I stack my Astoundings up with the binding out, but the binding

has changed so much in the past year that it looks awful uneven.

"The Legion of Time" was a swell story, but not my idea of a mutant. Not like the covers. I realize that a mutant is only a small change, but the change that the "Legion of Time" was supposed to be is so small I can't see it. How about changes you can notice next time?

Most welcome change to me would be a change of the lettering on the cover. You know—Astounding. Change them from the skinny type just like you did with *The Shadow*, *Doc Savage*, and some other Street & Smith publications. Then I'll want the story titles changed. The lettering, I mean. I hate them crooked, unshapely nightmares. Goodbye!—Tony Strother, 5020 Dodge Street, Duluth, Minnesota.

It's myth—pure myth!

Dear Editor:

Hereby relating my favorite nightmare which I can bring about at will by a midnight snack of crab meat and ice cream:

Seaton, contained in *Sky Ark XXX*, unexpectedly pops out of next week, intending to set down on Earth for an overhaul and a keg of beer. Things have changed. Kinnison & Co. now run the whole show, and aside from that there ain't no more beer.

Kinnison immediately spots Seaton, and mistakes him for a new breed of bad man. He comes on a dead run clear from Alaskan, over-shooting Seaton by about sixty paces. The gallant Patrolman bounces right back, though, and makes fast with a sky hook.

While Kim is lining up his ZQ gun with the *Sky Ark*, Seaton sneaks in through an atom rift and takes a squint over the Star Cop's shoulder. Horror climbs all over his countenance as he sees his own gunboat so nicely on the spot. Kinny yanks the trigger, so Seaton hustles back and departs for last Friday.

The ZQ pellet carries on through empty space and smacks square on the nose of a ten billion ton steam boiler which is piloted by the Hon. Lost Spook DuQuense. This worthy spirit has just returned from nowhere with a nasty grudge and some real heavy artillery to settle Mr. Seaton's hash once and for all.

But his ambitions are smashed. The detonation jars him out of his wits and he stops to think. In this condition he falls easy prey to an old space dog who is just winding up a ten year journey from Ganymede in an emergency spaceship. This marvelous craft has a bamboo framework, palm leaf plates, and is powered by banana-oil explosions.

Said space dog cuts loose with a full blast from his battery of coconut-shell plague-ray projectors. Marc is laid low with a severe case of Ganymedean D. T.'s. In his delirium he imagines the Moon is a ball of iridium, and tries to make a steal.

With all his powerful tractors he tugs and tugs and tugs, opposed only by a heroic single-handed struggle by the old space dog. Kimby is in a deep study, trying to figure out what's wrong with his detectors, a super tug of war goes on, and— At this time I usually wake up, turn the light on and wait for the dawn—J. C. Dean, Red Bank, N. J.

Casey's Uranians explained?

Dear Mr. Campbell:

I'd like to congratulate Brown on that July cover that was one dandy job, but Oh, Foo! and again Foo! "Voyage 13" smelled. The rest of July was fine, except Dold and Brown's inside work.

And so to August. Please, please keep Wesso on the inside! Brown does the best covers, and Wesso the best inside work. "Who Goes There?" was the best story—except of course, "Legion of Time"—in the past three issues. "Hell Ship"

was second, but I'll put in my Analytical Laboratory for ratings.

Wesso gets another scallion and one orchid. Scallion: 1938 styles of clothing on people of the year twenty-three-umpty-boom. Orchid: Both illustrations for "The Terrible Sense". They were better than the story (which, by the way, was a sockeroo, or shall I say, killer-diller?)

Oh, yes, Charles Jarvis: Suppose Earthlings had settled Uranus, living in huge domes, or sealed caves. Then, perhaps, the mother planet tried to put a tax on their tea, or sumpin'. History repeats itself, and that would account for Casey's Uranians, and the war, in one swell whoop.

And so, bringing his first letter to Astounding in three years to a close, we say, farewell—Richard E. Conrad, 513 Broadway, Orlando, Florida.

Tut-tut—we started him six months ago!

Dear Editor:

Your August issue was the best since the closing installment of "Galactic Patrol", which is undoubtedly the best science-fiction novel ever published. If a sequel could be half as good as "Galactic Patrol" it surpasses by far any other serial published recently. "Three Thousand Years" was awful, and "The Legion of Time" was little better.

Suppose that Kinnison was wrong in his idea that Helmut was Boskone; and that Boskone again menaces the Galaxy. I think that this would make an excellent basis for a sequel, and I am sure that Dr. Smith can turn the trick. Why not put him to work on this immediately. There is all to gain and nothing to lose.

"Jason Comes Home" was the best of the August issue; followed in order by "Asteroid Pirates", "Who Goes There?", "Hell Ship", "Eviction by Isotherm", "Resilient Planet", "The Terrible Sense", and "The Disinherited".

Keep up the good work, but add a little more of Eando Binder, Wellman, and D. A. Stuart—W. O. Bryant, Jr., Elizabethtown, North Carolina.

"Spiked club" now stuffed with feathers.

Dear Mr. Campbell:

It is with fear and trembling that I address the throne again. The last one I wrote escaped being called a brick-bat, only by being termed an assault with a spiked club. Evidently there have been some results, as I don't find it necessary to use a club or even a brick-bat at this writing.

My chief criticism has always been that there has been a lot of sloppy writing creeping into the pages of science-fiction magazines. It is with pleasure that I can report a tremendous improvement along this line. Even the great Dr. Smith has been guilty in his last opus, but redeemed himself with his science article. That was simply fine in every respect.

I like your new writers very much—orchids to Kent Casey in particular. Williamson could be one of the best in the field if he could learn to reason logically. His writing is clear, and the atmosphere he creates is plausible—except when he gets a character in a tough spot, and presto it all clears up, and if you don't believe it, it's all done with the aid of mirrors.

Attached you will find my selections for this month. You will note that I put Don Stuart's "Who Goes There?" a poor last. This is not on account of the mechanics of his writing, but only that the tale was highly repulsive to me personally. I just didn't like it. However, I think Mr. Stuart is one of your better writers and he has written stories that rank with the best.

The August issue has no serials. Don't you think your fans prefer to have one going? How about putting the heat on Dr. Smith for a three

part serial? The good Doctor is the tops when he really works at it—R. B. Dawson, Box 274, Plano, Illinois.

Josh McNab will be back soon.

Dear Sir:

Tonight is a wonderful night to read. Here I sit in our penthouse apartment, torrential rain beating down on the glass portieres, curled up with an apple, and Astounding. Every now and then the sudden spattering of the raindrops is interspersed with a roll of thunder and a brilliant flash of lightning. The ideal night for writing this letter and finishing the magazine. Just a moment more, and I'll be done with "Hell Ship".

There—"Aye, sir, that I will, but I willna like it" and the story is done. That's the best long novel I've read since "Proteus Island". A fine piece of brilliant writing, and I'll remember Josh for a long, long time. I wish you had had a picture of him, though.

I notice a new author by the name of Malcom Jamerson, whose "Eviction by Isotherm" hit the spot with me. Just the right atmosphere for it, I guess, what with cold downpour trickling its icy fingers along the glass panes and the story dealing with an eternal winter. Anyhow—my, but that was poetic!

Another gem was "The Terrible Sense", which might have been written by—(ooh, I almost said Weinbaum!) Why don't you publish more of this type?

I didn't shriek in ecstasy over "The Disinherited", because it sounded a little childlike. That old stand-by, the visitor from Mars, again. And why, why, why do they always talk as though they were holding a volume of Shakespeare in their mouth? And isn't it about time some clever author thought up a new way to have aliens speak English, other than by this refreshingly new idea of telepathy?

Don A. Stuart's "Who Goes There?" was good enough to hold my interest through what tomorrow's newspapers will call the "worst thunderstorm since Minskys was raided". Good, solid reading—not too new in plot, but all right for my twenty cents.

The popular opinion is apparently against too much article writing, and I for one (being, after all, just a dumb dame) neither comprehend nor lick my chops over Willy Ley's rocket data. Mr. Ley has it all figured out nicely; how to run the ship, how to plot the orbit, but—he mentions nothing about how to build the ship, assuming this to be of little import. Pooley, Willy.

I'm suddenly alarmed over the way in which Brass Tacks and Discussions has been deleted. You don't expect to get away with it, do you? No, no, you can't do that to me! (Slow curtain.)

Say, who did that awful cartoon for the

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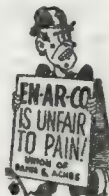
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"Disinherited"? The story was bad enough, but the drawing—I throw up my hands in despair. (It's lucky I ate that apple a half hour ago, or my hands might not be the only thing.)

Well, you can have the magazine back now, but don't let me catch you taking any wooden Schachner tales—Patricia Evans, 635 Park Avenue, New York City.

Down with Love!

Dear Editor:

I just wish to amplify certain sane remarks by Don G. Turnbull which appeared in the July Brass Tacks.

"Love interest" has no place in serious science-fiction—and it should not be necessary to include it. A good story, by which I mean a well-written piece of science-fiction based on a sound, ingenious plot, should be in itself sufficient to grip the readers' attention, without necessitating the introduction of the sex bogey.

Science-fiction (especially Astounding) does not cater to sentimental old maids who like a bit of "slop" in their literature. Neither does it cater to love-sick nymphs who attempt to gain the Elysium of their frustrated desires via the doorway of books.

Your male readers greatly outnumber your female fans, so why not cut out the age-old love idea, and give us newer themes?

The only kind of tale in which love interest is (perhaps) permissible is the humorous one. When the "mighty emotion" is stripped of its banality and dressed in the ludicrous garments of frivolity—it becomes bearable. If you don't believe me, refer back to the works of S. G. Weinbaum—particularly his Van Mauderpoort series—and laugh.

There are few writers today who can handle L. I. so effectively.

Congratulations on Brown's wonderful cover, the best I've seen in years. I liked L. Roa Hubbard's "Dangerous Dimension" too! Quite amusing!—David Melliain, 14 Cotswold St., Liverpool, England.

And psychologists say we can't picture more than four things at a time!

Dear Editor:

After the good showing of last month, the September issue of Astounding is rather a disappointment. The best story is the new serial, "The Tramp." An interesting idea, and the story begins well. The other stories, in order: "Orbit XXIII-H," a rambling plot, poorly constructed, uninteresting. "Double! Double!": extremely interesting and amusing. "The Trapper": a common adventure short written by one who (it would seem) knows less than nothing of science or science-fiction. "Treasure Asteroid": another common adventure short, this one with a bit more science-fiction background; uninteresting. "X1-2-200": an interesting story—nothing startling or new. "Impulse" same class and rating as above. "Robots Return": one bright idea, but mostly just "fill-in."

The cover was just what we would have expected from Thomson—passable, but not equal to Brown or Wesso. Schneeman's interiors in this issue are poor. Wesso and Dold are good, as usual, with the others passable.

In "Science Discussions" the "treatise" by J. R. Feeney hit me right where I live. It pleases me to see some of these would-be scientific "discussers" took down a notch. If they would only remember, as he says, that much of the more advanced "science" is theory, probability, and extrapolation from facts, they could more easily enjoy some of the "impossible" stories which you print. As the saying goes, "Only a fool is positive." "Are you sure of that?" someone will ask. "Sure? I'm positive!"

And as for Jim Blish and his criticism of the cosmic proportions of Dr. Smith's stories: "Is

It necessary to visualize those millions of light-years to enjoy the stories? Have you read Sir James Jeans' "The Universe Around Us"? That deals with fact, and there are some mighty large figures quoted, but it does not prevent one from imagining that he can visualize the wonders of the heavens. Open your imagination! Cultivate it. We have little opportunity, outside of the Doctor's stories, to visit even our nearest neighbors in this minute galactic cluster of the First Universe. We, who aspire to traverse the outer void to the Other Universe!—L. M. Jensen, Box 35, Cowley, Wyo.

be, as cold and emotionless as a statue and not half as lifelike. Reading through it was like laboring through some sort of scientific treatise. Mr. Willey is entirely too painstaking and too serious about the story. If he had loosened up a bit, had been a little more airy, I might have liked it. As it was, I went to sleep in the middle.

On the extreme left, we have Eddin Clark's "Double! Double!" representing the ultra-radical movement in science-fiction. I was much more disappointed in this story than in Mr. Willey's, because I have always expected more from fantasy, that being my favorite type of science-fiction. However, there is a definite boundary between fantasy and slapstick and, as far as I am concerned, there is no doubt that Mr. Clark's yarn was a rather miserable example of slapstick.

To put it another way, fantasy is to science-fiction what icing is to cake. But I'd hate to have to consume a cake made entirely of icing. "Double! Double!" was a little too fantastic, and the attempt at humor was too deliberate to be natural. What's worse is that any bit of fantastic, humorous, or satirical work must be short to be effective. This is by no means an airtight rule, but there are very few authors in science-fiction that can keep up an authentic atmosphere of worthwhile fantasy for more than ten pages. Eddin Clark does not seem to be one of these.

In between these two extremes were six stories of more moderate nature. One of these, "Robot's Return," by Robert Moore Williams, was only fair, but the other five hit the spot with a bang. (All four star stories on a five-star maximum.)

1. "Trapper," by Arthur J. Burke. The author's best since "Golden Horseshoe" and perhaps even better than that.

2. "XI-2-200," by Ray Cummings. Most human robot I ever read of. What a pity Cummings killed him at the end! This, by the way, is the first decent story by Cummings I ever read.

3. "Treasure Asteroid," by Manly Wade Wellman. Interesting and exciting.

4. "The Tramp," by L. Ron Hubbard. I like Hubbard's writing style and hope the rest of the yarn lives up to the first installment.

5. "Impulse," by Eric Frank Russell. Plenty of suspense.

I notice that the September issue contained no science articles. That is rather more to the good than to the bad. I think the space used up formerly by the articles could more profitably be turned to fictional uses, though an occasional good article (such as "Catastrophe" or "Witnesses of the Past") would be acceptable.

Well, anyway, here's a toast to Astounding on its sixth birthday as a Street & Smith. May it be published for six hundred years more, if not longer!

And as you now complete your fifth year, it might be to the point to think up a list of the ten best stories for that year. Here's my version:

1. "Island of the Individualists," by Nat Schachner.

2. "City of the Rocket Horde," by Nat Schachner.

3. "Galactic Patrol," by Edward E. Smith.

4. "Who Goes There?" by Don A. Stuart.

5. "Legion of Time," by Jack Williamson.

6. "Men and the Mirror," by Ross Rocklynne.

7. "Wings of the Storm," by Manly Wade Wellman.

8. "Dangerous Dimension," by L. Ron Hubbard.

9. "Red Heritage," by John Russell Fearn.

10. "Wayward World," by Gordon A. Giles.

In addition, the five best articles of the year were:

1. "Catastrophe," by Edward E. Smith.

2. "Witnesses of the Past," by Willy Ley.

3. "Giant Stars," by Arthur McCann.

4. "Spectral Adventurers," by Herbert C. MacKay.

5. "Language for Time-Travelers," by L. Sprague de Camp.—Isaac Asimov, 174 Windsor Place, Brooklyn, New York.

Best stories of the last five years.

Dear Mr. Campbell:

Now that Astounding has completed its fifth year I just couldn't resist the urge to list the best products of that glorious reign. You have no idea what a kick I got out of doing it, either. As I thumbed through each priceless issue, I—well—you know what I mean.

Here goes. The five best short stories:

1. "A Beast of the Void," by Raymond Z. Gallun.

2. "Interplanetary," by Chan Corbett.

3. "Twilight," by Don A. Stuart.

4. "Night," by Don A. Stuart.

5. "Mana," by Eric Frank Russell.

Five best novels:

1. Seeker of Tomorrow," by Eric Frank Russell and Leslie T. Johnson.

2. "The Red Peri," by Stanley G. Weinbaum.

3. "Godson of Almaru," by Raymond Z. Gallun.

4. "Pacifica," by Nat Schachner.

5. "World of Purple Light," by Warner Van Lorne.

And finally—the five best serials:

1. "Rebirth," by T. C. McClary.

2. "Galactic Patrol," by E. E. Smith.

3. "Infra Universe," by Nat Schachner.

4. "Cometeers," by Jack Williamson.

5. "Legion of Time," by Jack Williamson.

Well, anyway, that's that. It was no easy task picking fifteen out of hundreds of swell stories that have appeared in Astounding, either. But now the issue on hand.

It brings me back with a jolt, to reality. The September issue, I mean. The cover was terrible. Please stick to Wesso, Brown or Schneeman in future covers. And you fell down on the inside artwork. Only Wesso did a decent job—that illustration for Ray Cummings' story. You did, however, have two good stories. The rest ranged from mediocre to pretty good.

Best one, of course, was "XI-2-200." The finest robot story I've yet read. Yes first place goes very decisively to "XI-2-200." Next comes "The Trapper." Sort of a new time story. I didn't think any more of them existed. "Double! Double!" was humorous—yet a bit confusing. But I can stand a few more of that type I guess. It was pretty good. Haven't read "The Tramp" yet, so no comment as yet. Now about "Orbit XXIII-H." Please—no more of that type! The rest of the stories were fair, but hardly worth mentioning, so I guess that's all.

I hate to turn in such a bad report, for your anniversary, but I knew you couldn't keep up such a pace as your July issue. Let's hope the October issue is better.—Mark Reinsberg, 430 Surf St., Chicago, Ill.

Best stories of the year.

Dear Mr. Campbell:

The September issue of Astounding was a particularly interesting one in that it contained two stories which represented the opposite extremes of science-fiction. I found, a little to my surprise, that I heartily disliked both stories.

On the extreme right was Robert Willey's "Orbit XXIII-H," an example of ultra-conservative science-fiction. It was as realistic as could

Artists and Authors.

Dear Mr. Campbell:

Congratulations! Your September issue far surpassed, in some ways, the past few months. The few reasons being "Double! Double!" which at last is really funny. Your recent attempts (meaning Casey, Schere and Heckman) at trying to be comical weren't very successful—with me, at least. Clark is an exceptionally good writer; secure from him some real science-fiction.

I nearly did a highland fling of pure joy when I read "Orbit XXIII-H" which is one of the best interplanetary yarns ever written. If some of your authors would only write interplanetaries around the laws of, at least, logic, as set down in Willy Ley's most thought-provoking article entitled "Orbits, Take-Offs and Landings" we would have stories of such a quality that even the continually moaning ones would have to sink into reticence.

"Robots Return" was a masterly yarn that seems to be reminiscent of the much bemoaned "Old Days!" I'm sure it is by far the best yarn ever turned out by Williams. More power to you, man!

"Impulse" was an old idea well handled, in fact, done in the way that makes the writings of such demi-gods as E. E. Smith, Don A. Stuart and John Russell Fearn so inimitable. Russell should, in all fairness to science-fiction, write more frequently. That covers the contents; I didn't think the other stories were anything to waste paper about.

The cover was not bad at all. Thomson does far better in mixing his colors than in black-and-white illustrations. He's a change, at any rate, but don't give him to us too frequently.

The illustrations were very good. Urban is going to be a worthy antagonist for the much renowned Mr. Wesso. His illustration for "Treasure Asteroid" was excellent, as was the first one for "Double! Double!" The second one was just below the par set by the first two, but was still far above average. Dold, old stand-by, as usual came forth with three "beauts" for "Orbit XXIII-H" and one quite in harmony with the eeriness called for in "Impulse." Schneeman gets Honourable Mention this issue, and, if I were the Editor, double the usual rates for his two masterpieces. The one for the Burks' enigma was far above excellent, for a minute I almost thought the lifelike animals were going to jump out of the picture at me and that I'd hear any minute the crack of the rifle. But, oh, when I saw that preter-human example of magnificence for "Robots Return" I was literally rendered adjectiveless and that's some accomplishment, I'm telling you.

Now for a few brickbats, prayers, etc. It seems that science-fiction has changed radically in even the last six months. How about bringing back stories of the type Don A. Stuart used to write, Mr. Campbell? To wit, "Frictional Losses," that wonderful story whose type has not to this day been surpassed. In that story the characters live, the reader lived with the old Hugh Thomson and his contemporaries, but even then, Stuart did something else, he subtly imparted the true significance, the ironic, futile reality of the cause of trying to retain the last vestiges of a dead culture, science, when the Second Expedition was on its way, and how the survivors reacted to this fact. That was drama, drama and tragic reality such as only the real author can impart to the reader. This is the type of story that contains real human interest, not a lot of mushy love that has been twisted to mean human interest. But, also, there was science in it, good sound science.

Then, again, such stories as "Mathematica" and its superb sequel, "Mathematica Plus." They had super science handled logically. By the way, Mr. Campbell, is there any chance of securing a serial novel from John Russell Fearn? He is an exceptional author and writes some of the best prose in science-fiction. He has been dormant for quite a little while, hasn't he, none of the usual long material that characterizes him? Can it be that the gentleman is working

on a super-corker? Let's hope so.

Another thing, where is Chan Corbett, the illustrious author of "Beyond Infinity," "Nova in Messier 33" and other well-remembered, real stories? You shouldn't let such authors as he get away from you. Also, while on authors, is it possible to procure Neil R. Jones on a Prof. Jameson tale? If you could get a Zorome story you would put Astounding on undisputed pinacles, it's far above any other magazine of its type, mind you, but it could be still higher and I'm sure you'd never relent adding, if possible Jones and Corbett to Astounding's list of regular contributors.

Now for a few jabs. I know you are having an awful hard time. Mr. Campbell, trying to satisfy the unalike hordes of Astounding for its human nature when one person likes a designated story for someone else not to like it, but, please give us at least some of the stories that we like, spare us from too many of these terrible apparitions running around loose, meaning M. Schere, Royle Heckman, and Casey, this latter is the least offensive of the trio and might even be passable if he starts to work on some serious s-f; he is not funny, you know.

Back again for a few pleas. Don't you think Ray Gallun's recent work warrants a serial from him? I guess you know how I like serials, eh what?

Anent the present policy of Astounding: the long novelette, which is longer than some of the two-part serials of a little while ago, is what I have hoped to see introduced for a good number of years. And, as you are asking for opinions, here's mine of how I'd like Astounding: two novelettes of the size I have just mentioned, at least one serial, preferably two, running at all times, lengthy article in layman language in every issue, never below two of these, and the rest of the space divided up among "Discussions" and "Brass Tacks" and, if you have to have them, a few short stories. Abstract, though these opinions may seem, you can't say you didn't ask for them.—J. Mason, 133 Isabella St., Toronto, Ont., Canada.

Readers don't agree on "Double! Double!" and "Orbit XXIII-H".

Dear Editor:

You have this month published one of the finest science-fiction stories ever written, and that without much advance publicity. "Orbit XXIII-H," by Robert Willey is outstanding for a well-rounded narrative. I rate it over everything you have published for a long time.

1. "Orbit XXIII-H."
2. "The Trapper."
3. "The Tramp."
4. "Treasure Asteroid."

The others I don't care for—particularly the horror story. Humor is somewhat out of place, but "Double! Double!" was cleverly written.

The two robot stories are readable, but please won't your authors wake up to the fact that a manlike robot is long since old-fashioned? I know from whence they get their inspiration, but there is almost no demand for them. We have millions of robots that do every conceivable service for us, and the problems they have brought with them are well nigh beyond solution. I am, of course, referring to our automatic machinery and the labor displacement problems they have brought. But a machine built like a man, to do man's work, I can't see. As a machine, man is not a desirable pattern where efficiency is involved. No, those robot stories are clean out of date; our present advancement has passed them. We wouldn't want them if we could have them.

Keep up the good work, Mr. Campbell, and keep the heat on Dr. E. E. Smith Ph.D., for a story about a third the length of "Galactic Patrol," for he is indeed the master science-fiction writer.—A. B. Dawson, Box 274, Plano, Ill.

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RIPLEY'S EXPLANATION: 26 Mile Knee Crawl Over Untreated Concrete! The world's longest foot-race is the Olympic Marathon—26 miles, 385 yards. Tom Boyd went the distance *on his knees*, over untreated concrete, wearing unprotected Lee Jelt Denim Overalls, every step supervised by a Certified Public Accountant. He had to quit once, because the skin on his knees wore out! The "C. P. A." sent me the certified report and the Lee Overalls. The denim looks as if it had miles of grueling wear left in it. The strong multiple-twist yarn puts amazing strength in this genuine Jelt Denim for the toughest job.

166,344 Trampling Feet—A strip of Jelt Denim, the identical special denim used in Lee Overalls, was put down in the entrance of a towering skyscraper. 83,172 people walked across it—taking an average of 3 steps each *on the Jelt Denim!* 249,516 steps altogether! The Jelt Denim, while showing some wear, didn't have a hole or a break, still held its blue color! Here's amazing proof of Lee Overalls extra wear for your money—Believe It Or Not!

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